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Draft

August 1992

Middle Deschutes/Lower Crooked Wild and Scenic Rivers' Management Plan and Environmental Assessment

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August 28, 1992

Dear River Enthusiast,

Enclosed is a copy of the Draft Management Plan for the Middle Deschutes and Lower Crooked Wild and Scenic Rivers. Development of this plan has been a joint two year effort between the public, Bureau of Land Management, Ochoco National Forest, Oregon State Parks and Recreation Department, and a variety of local agencies.

Development of the plan has been achieved by developing a reasonable range of alternatives to manage the river corridor; evaluating their impacts to the physical, biological, social, and economic resources; and selecting a preferred alternative to be used as a tool to help manage the river corridor. Comments and support for alternative development were received during the initial stages of the planning process through public scoping meetings, newsletter comments, and work group participation.

We ask that you consider each of the identified alternatives and their associated impact analysis. The draft preferred alternative includes those management actions that the interdisciplinary team feels best resolve the identified issues.

We hope that you will take this opportunity to respond concerning whether you feel the draft preferred alternative is the best way to resolve the identified issues. If you feel the draft preferred alternative should be changed, please tell us specifically how you would change it and why. If you feel that the analysis of impacts is incomplete or inaccurate, we would also appreciate your comments.

There is also a separate chapter that describes the State Scenic Waterway Program and includes river classifications and land management rules for the Middle Deschutes River. The program will be adopted and implemented once it is approved by the State Parks Commission and State Water Resources Commission. Feel free to comment on this chapter as well.

Please review this document and send us your written comments no later than October 30, 1992. You may also share your ideas and opinions by attending one of two public meetings to be held at the following locations: Nendels Hotel in Redmond on October 15, 1992 from 6:00 pm to 9:00 pm and the Public Library in Salem on October 22, 1992 from 6:00 pm to 9:00 pm.

Send written comments to: Ed Perault, River Coordinator, Bureau of Land Management, P.O. Box 550, Prineville, OR 97754.

We appreciate your interest in the Middle Deschutes and Lower Crooked Rivers and look forward to hearing from you. If you have any questions during your review please contact Ed Perault of the Prineville District BLM (447-4115) or Jan Houck of State Parks and Recreation (388-6211). Thank you.

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Prineville, BLM

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Summary

A. Introduction

The Omnibus Oregon Wild and Scenic Rivers Act of 1988 directed the Bureau of Land Management in cooperation with the U.S Forest Service (National Grasslands) to develop a management plan for the designated portions of the Middle Deschutes and Lower Crooked Rivers where they converge at Lake Billy Chinook. Oregon State Department of Parks and Recreation is also a joint partner in the planning process due to the Middle Deschutes being designated as a State Scenic Waterway.

Management plan development is achieved by developing a reasonable range of alternatives to manage the river corridor; evaluating their impacts to the physical, biological, social, and economic resources; and selecting a preferred alternative to be used as a tool to manage the river corridor. Comments and support for alternative development were received during the initial stages of the planning process through public scoping meetings, newsletter comments, and work group participation. The draft preferred alternative, as described in this document, will be edited as necessary during the public comment period then finalized and presented in the final management plan and record of decision.

The State Scenic Waterway program as presented in this document will be revised according to comments received and the results of any new information collected by State Parks and Recreation staff. The program plan will then be presented to the State Parks and Recreation Commission for adoption and subsequently incorporated into the Oregon Administrative Rules.

Management of Deschutes and Jefferson county public lands within the wild and scenic river corridors is not included within this document. Management of these county lands will be as defined in their revised comprehensive plans.

B. Issues

Seven key issues guided the development and evaluation of the Middle Deschutes/Lower Crooked River management alternatives:

1. How should recreation opportunities be managed?

2. How should private landowners and the local, state, and federal management agencies cooperate in visitor and resource management of the river corridor?

3. How should cultural, historical, and traditional use resources be managed?

4. How should aquatic and riparian resources be managed?

5. How should vegetation and wildlife habitat be managed?

6. How should commercial resource uses be managed?

7. Where should the final Middle Deschutes/Lower Crooked Wild and Scenic River boundaries be located?

C. Management Alternatives

Alternative 1

Alternative 1 is the "no action" alternative required by NEPA. This alternative describes existing management. The intent would be to continue current management direction for federal lands within the both wild and scenic river corridors. Existing dispersed campgrounds, roads, and trails would be managed as is without development change and resource protection activities would remain status quo.

Alternative 2

This alternative would allow for maximum multiple use in the corridors with an emphasis on increasing recreation opportunities. A variety of different resource enhancement projects would take place to resolve resource problems. Coordination would occur to minimize effects on landowners and land use practices. Campgrounds, trailheads, and related access and facility development would be maximized.

Alternative 3

Management would be much like Alternative 2, except management under this alternative would focus on increased resource protection and development of centralized use areas while providing for semi-primitive recreation opportunities. Resource enhancement projects would need to be natural in appearance. Campgrounds, trailheads, and related access and facility development would be minimized.

Alternative 4

This alternative would increase the naturalness of the lands within the river corridors. The overall management goal would be not just to maintain, but to enhance river corridor values, and provide opportunities for primitive recreational use and development compatible with resource enhancement objectives. Development would remain almost non-existent within the core of the boundaries.

Alternative 5 (Draft Preferred)

The goal of Alternative 5 is to maintain and/or enhance the current character of the river corridors while rehabilitating degrading resources and providing long-term protection and enhancement of its outstandingly remarkable values. Coordination would occur to minimize effects on landowners and land use practices. Campgrounds, trailheads, and related access and facility development would be minimized but meet current user need.

D. Environmental Consequences

Summary of Overall Impacts to All Resources by Alternative

Managing	Alt1 (NoAction)	Alt 2	Alt 3	Alt 4	Alt 5 (Pref)
Scenery	-L	NC	+L	+L	+L
Recreation	NC	+L	+L	NC	+L
Fish	NC	+L	+L	+L	+L
Water	-L	+L	+L	+L	+L
Riparian	NC	+L	+L	+L	+L
Wildlife	NC	-L	+L	+L	+L
Cultural	-M	-L	+L	+L	+L
Soil	-L	+L	+L	+M	+L
Vegetation	-L	+L	+L	+M	+L
Air	-L	NC	NC	NC	NC
Commercial Use	NC	NC	-L	-L	NC
Socioeconomics	NC	+L	+L	+L	+L

\+ Beneficial
\- Adverse
NC No Change/Impacts Offset
H High
M Medium
L Low
NA Not Applicable

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I. Purpose and Need for Action

A. Introduction

The Middle Deschutes River between Sawyer Park in Bend, Oregon to Lake Billy Chinook was recently designated as a component of the Oregon State Scenic Waterway System. This designation includes Segments 1 - 4 of the Middle Deschutes as shown in Table 1. By law, the boundary for this State Scenic Waterway is 1/4 mile from the bank on each side of the river. There is no State Scenic Waterway designation for the Lower Crooked River at this time. Refer to Chapter 6 for more information on State Scenic Waterways.

In October 1988, 20 miles of the Middle Deschutes, from Odin Falls to Lake Billy Chinook (Segments 3 and 4), was designated by the U.S. Congress as a National Wild and Scenic River and classified as a scenic river area. Congress also designated the 9.8 mile segment of the Lower Crooked River from the National Grasslands boundary near Ogden wayside to river mile 8 as a National Wild and Scenic River and was classified as a recreational river area.

Section 3 of the Wild and Scenic Rivers Act (Public Law 90-542, 82 Stat. 907) specifies that a comprehensive management plan will be developed for the Middle Deschutes and Lower Crooked River. The Secretary of Interior, given responsibility for administering these rivers, delegated this duty to the Bureau of Land Management (BLM) and is mandated to have the plan completed by September, 1992. Because the U.S. Forest Service and Oregon State Parks and Recreation also have administrative responsibilities within the planning area, they are joint partners in the coordinated planning process. It was determined in the early stages of the planning effort to include an amended State Scenic Waterway Plan within this document to ensure land management consistency.

The overall purpose of this document is to provide a basis for comparing management alternatives and selecting a management plan for public lands[1] within Segments 3 and 4 of the Middle Deschutes and the Lower Crooked River segment. For the purposes of this document, segment 1 and 2 will be analyzed in Chapter 6 - State Scenic Waterways Program. The river management plan, when completed, will satisfy requirements of the National Environmental Policy Act, the Omnibus Oregon Wild and Scenic Rivers Act of 1988, and will conform to planning objectives in the Brothers/ LaPine Resource Managment Plan, Crooked River National Grasslands Land and Resource Management Plan, and State Scenic Waterway planning documents.

Management of Deschutes and Jefferson county public lands within the wild and scenic river corridors is not included within this document. Management of these county lands will be as defined in their revised comprehensive plans.

B. Management Planning Process

As specified in the Wild and Scenic Rivers Act and federal guidelines, the process of developing a management plan for designated rivers has several steps. Because the management plan is considered a major federal action affecting the environment, the procedures outlined in the National Environmental Policy Act (NEPA) and its set of federal guidelines also must be followed. The planning process involved the following six basic steps:

[1] *Public land(s) in the context of this document is synonymous with state and federally managed lands.*

1. **Project Scoping/Public Involvement:** public meetings to identify issues, concerns, and objectives; organize a citizen's work group; and develop mailing lists of other interested parties.

2. **Resource Evaluation:** identify and evaluate river-related resources and determine outstandingly remarkable values.

3. **Identification of Management Alternatives:** clarify issues, evaluate existing river management practices, identify a range of potential management actions, and evaluate the feasibility of alternative management scenarios.
4. **Conduct an Environmental Analysis:** determine the consequences of management alternatives and evaluate the relative merits of alternatives.

5. **Prepare an Environmental Assessment:** Consolidate the above steps in an Environmental Assessment document for public review and comment.

6. **Select a Preferred Alternative and Develop a Management Plan:** identify a preferred alternative based on environmental analysis and develop a management plan and implementation strategy.

Refer to Table 2 for a further breakdown of the planning process and schedule.

C. Public Involvement

Due to the amount of private land and regional popularity of the river corridors[2], an extensive public involvement program was developed to make sure that the management plan would consider the concerns of local residents, landowners, recreation users, Deschutes and Jefferson County, the State of Oregon, other federal agencies, and all others having a stake in how the rivers are managed. The public involvement program consisted of public meetings, a citizen work group, mailings to interested parties, and

Table 1 - River Segments*

Segment 1	Middle Deschutes	The 5 mile segment from Sawyer Park to Tumalo State Park.
Segment 2	Middle Deschutes	The 17 mile segment from Deschutes Market Road to Odin Falls.
Segment 3	Middle Deschutes	The 9 mile segment from Odin Falls to the Wilderness Study Area (WSA) boundary.
Segment 4	Middle Deschutes	The 11 mile segment from the WSA boundary to the Upper End of Lake Billy Chinook.
Lower Crooked River Segment		The entire 9.8 mile segment from the National Grassland boundary to Opal Springs.

** These segments were identified during development of the resource assessment. State Scenic Waterway segments are broken down into more specific areas as shown in Chapter 6.*

Table 2 - Planning Process and Schedule		
River designated as Wild and Scenic	October	1988
Interim boundary delineation	July	1989
Goal and objectives developed for plan	February	1991
Initial scoping	June-Nov	1991
Resource assessment; data collection	April-Dec	1991
Issues identified and described in detail	November	1991
Range of management alternatives developed	Jan-Mar	1992
Analyze the effect of alternatives	Mar-Apr	1992
Public review and comment of draft alternatives	April	1992
Selection of preferred alternative	May	1992
Development of the management plan	May-Aug	1992
Implementation, monitoring, and plan updates	Ongoing	

informational flyers, as well as ongoing informal meetings with any party requesting them.

Public Meetings - The National Environmental Policy Act (PL 91-190) and accompanying federal guidelines and regulations (40 CFR Parts 1500-1508 as of July 1, 1986) specify the required procedures for preparing Environmental Assessments. This includes holding scoping meetings early in the process so citizens have an opportunity to express issues and concerns important to them. Public scoping meetings were held in seven locations. These meetings also scoped issues and concerns on other rivers located in the central Oregon area. Table 3 represents locations and the number of people who attended each public meeting.

In addition to providing interested parties an opportunity to voice their comments and concerns, attendees were given the opportunity to review the draft resource assessment with a 30-day comment period. All seven meetings were advertised in local and regional media.

Citizen Work Group - To help ensure that diverse viewpoints were considered during each step of the study, a citizen work group was created. The work group served as an integral part of the planning team, helping to identify issues, determine significance of river resources, develop and refine alternatives for designation and management, and keep their fellow interest group members informed about the planning process.

The work group was composed of 21 representatives (and their alternates) from a wide range of interests concerned about the future of the river: private landowners, ranchers, water right holders, commercial outfitters, anglers, Confederated Tribes of the Warm Springs Reservation,

2 River corridor(s) represent the total area within the wild and scenic river boundary(s).

Oregon Department of Fish and Wildlife, Deschutes and Jefferson County, Central Oregon Irrigation District, Deschutes Valley Water District, Oregon Natural Desert Association, Central Oregon Flyfishers, Trout Unlimited, Oregon Trout, and Oregon Rivers Council and one representative from each of the joint managing agencies.

The work group held its first meeting on June 14, 1991, and met monthly throughout the planning process. The work group became familiar with the Wild and Scenic Rivers Act and helped develop a list of issues, determine the significance of river resources, develop and refine management alternatives, and represented their constituents well. In all, the work group met 15 times in the last year - a tremendous commitment of time and energy on the part of the members.

Interested Parties - A list of about 50 people, agencies, and groups was compiled to make sure that other interests were kept informed of the planning process. Interested parties were mailed copies of draft planning documents, future announcements of work group or interdisciplinary team meetings, and two information flyers.

Information Flyers - Two wild and scenic information flyers (High Desert River News) were prepared and mailed to hundreds of local and regional residents, interest groups, and government agencies. The first, published in July 1991 during the issue identification process, let people know about the planning process and how they could get involved. The second, published in April, 1992 was designed to provide an update of the planning process and express the availability of final resource assessments and draft alternatives. Both information flyers also contained information on other rivers located in the central Oregon area.

D. Resource Evaluation

When Congress enacted the National Wild and Scenic Rivers Act in 1968, a system was established for protecting outstanding free-flowing rivers nation-wide. The National Wild and Scenic Rivers Act requires that a river be free-flowing and possess one or more "Outstandingly Remarkable" values such as scenic, recreational, geologic, fish, wildlife, historic, botanical, or cultural resources. The Act provides for protective management and control of development for rivers included in the system.

Table 3 - Public Scoping Meetings

Location	Date	Attendees
Redmond, Oregon	8-14-91	25
Prineville, Oregon	8-15-91	12
Eugene, Oregon	8-19-91	4
Fossil, Oregon	8-20-91	17
Crooked River Ranch, Oregon	8-26-91	11
John Day, Oregon	8-27-91	10
Portland, Oregon	8-29-91	5

Congress determined scenic, recreational, cultural, geologic, wilderness, hydrologic, fish and wildlife, as well as historic and botanical resource values within the Middle Deschutes River corridor to be outstandingly remarkable. Congress also determined that scenic and recreation resource values within the Lower Crooked River corridor are outstandingly remarkable. On both rivers, these and other resource values were studied in greater detail by comparing them to similar features on other rivers in the region. A set of criteria were developed by a task force comprised of officials from BLM, U.S. Forest Service, and the State of Oregon to use in making the comparisons. The region selected for comparative analysis was the central Oregon area. This included both the Deschutes River Basin and the John Day River Basin.

Except for wilderness resources on the Middle Deschutes, the analysis confirmed the Congressional Record relating to outstandingly remarkable values within each river corridor. Analysis also determined geologic, hydrologic, wildlife, botanical, and cultural resources to be outstandingly remarkable on the Lower Crooked River segment. These and other resources in the river corridor are described in Chapter 3. Detailed analysis of river-related resources can be found in the final resource assessment which is available at the BLM, Prineville District Office.

E. Boundary Process

The Wild and Scenic Rivers Act (Section 3(b)) specifies that after a river is designated, the agency charged with its administration must establish detailed boundaries delineating the land area within the river corridor that will be managed under the Act. The Act specifies that the area within each corridor should not average more than 320 acres per river mile on both sides of the river, placing the boundaries an average of 1/4 mile from the river on each bank. This allows for irregular boundaries on either side of the river. Boundary delineation decisions are made on the basis of topography, location of outstanding resources, land ownership and use patterns, and public comment.

Early in the planning process, BLM held six public scoping meetings to ensure full public participation during preliminary boundary delineation. The interim National Wild and Scenic River boundaries as shown on the existing situation map in Appendix E, were developed as a result of these meetings. The boundaries are irregular in shape to include as many of the areas as possible that contain or directly support the identified outstandingly remarkable values associated with the river. During the public review period for scoping issues many people, including work group members, requested that the preliminary boundaries be reconsidered. Resulting alternative boundaries are discussed and analyzed in Chapter 2 and 4, respectively.

F. Related Federal, State, and Local Planning and Management Responsibilities

The Wild and Scenic River Management Act requires that a comprehensive river management plan be prepared to provide for the protection of river values. Therefore, it is necessary to insure that all entities that play a role in management of the river are included in the planning process. A variety of federal, state, and local entities have responsibilities to manage resources within the river corridor. Some of these include but are not limited to: BLM, U.S. Forest Service, Oregon State Parks and Recreation, Oregon Department of Fish and Wildlife, as well as, Deschutes and Jefferson County. Special emphasis programs, such as wildfire control and fish and wildlife enhancement projects are routinely coordinated among agencies, landowners, and other affected

publics. It is expected that these resource relationships be strengthened as a result of the management plan implementation.

Bureau of Land Management

In 1989, the BLM completed the Brothers/LaPine Resource Management Plan, which was a comprehensive land use or Resource Management Plan for most BLM lands and minerals in Deschutes and Jefferson County. The total BLM surface acreage at the time of RMP completion was over 1,111,100 acres, including all BLM lands within the Middle Deschutes/Lower Crooked Rivers planning area. BLM manages more than 43 percent of the lands within the river corridors. The Resource Management Plan included an environmental impact statement which documented the environmental consequences of the plan as well as numerous intergovernmental relationships. The plan established land use goals and objectives for Bureau administered lands, minerals, soils and watershed, rangeland, forest and woodlands, fish and wildlife habitat, recreation, and cultural resources. It incorporated management direction for roads and access, utility and transportation corridors, fire control, noxious weed control, Areas of Critical Environmental Concern, and continued interim management of wilderness study areas. Copies of the approved Brothers/LaPine Resource Management Plan are available from the Bureau's Prineville District Office.

The BLM in cooperation with the U.S. Forest Service manages land within Steelhead Falls Wilderness Study Area (WSA). Segment 4 of

Lower Crooked River near river mile 16.4

the Middle Deschutes River corridor lies entirely within this WSA. There are specific interim management actions, in addition to interim wild and scenic river guidelines, that protect resources within its boundary. Possible designation of this area as wilderness will be recognized in the final Congressional land use decision.

The BLM, Bureau of Reclamation, U.S. Forest Service, Oregon Department of Fish and Wildlife, Soil Conservation Service, and other interested groups are working to improve aquatic habitat in the Deschutes and Crooked River watershed. Cooperative work is continuing between these and other agencies in implementing riparian improvement projects.

U.S. Forest Service (Crooked River National Grasslands)

In 1989, the U.S. Forest Service completed the Crooked River National Grasslands Land and Resource Management Plan. This comprehensive Land and Resource Management Plan guides natural resource management activities and establishes management standards and guidelines for the Crooked River National Grasslands which is located entirely in Jefferson County. The U.S. Forest Service manages 30 percent of lands within the river corridors as defined by this plan. The Resource Management Plan included an environmental impact statement which documented the environmental consequences of the plan as well as numerous intergovernmental relationships. It also describes resource management practices, levels of resource production and management, and availability and suitability of lands for resource management. This document is available at the U.S. Forest Service office in Prineville, Oregon.

National Grasslands are a permanent part of the National Forest System, administered under the provisions and purposes of the Bankhead-Jones Farm Tenant Act. The rules and regulations applicable to national forests as set forth in Title 36, Code of Federal Regulations, also apply to national grasslands. The Grassland Plan also embodies the provisions of the National Forest Management Act of 1976, the implementing regulations, and other guiding documents.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service administers the Endangered Species Act of 1973 (as amended). The BLM and U.S. Forest Service consults with this agency to obtain a formal biological opinion on appropriate courses of action when it is determined that a threatened or endangered species, or its critical habitat, may be affected by a proposed management action. Resulting decisions could mean the proposed action be modified or abandoned.

Bureau of Reclamation

The Bureau of Reclamation (BOR) is actively involved in the Upper Deschutes Basin Water Conservation Study in cooperation with local water districts as well as other federal, state, and local agencies. The study's goal is to reduce loss of water withdrawals while supporting river-related resources on the Middle Deschutes and Lower Crooked Rivers and their tributaries. Projects such as canal lining, an instream flow study, and moving canal diversions may benefit river resources in the future.

Re-allocation of the uncommitted storage space in Prineville Reservoir has been an issue that the BOR has been studying for some time. As the project is now authorized and operated, all of the active capacity can be placed under contract for irrigation use as the demand arises. No reservoir space is specifically allocated for recreation or fish and wildlife uses. The authorized minimum flow in the Crooked River below Bowman Dam and beyond the North

Unit Irrigation flume is 10 cubic feet per second (cfs). However, in order to benefit the downstream fishery, Reclamation has been releasing 75 cfs below the Dam whenever there is sufficient water in the reservoir.

Confederated Tribes of the Warm Springs Reservation

The entire Middle Deschutes/Lower Crooked River planning area is located outside the Warms Springs Reservation and was ceded to the U.S. Government by the Tribes and Bands of the Middle Oregon through ratified treaty. The treaty reserves to the Indians exclusive rights of "taking fish in the streams." Tribal members also have the right of "hunting, gathering roots and berries, and pasturing their stock on unclaimed land in common with citizens". The interests of contemporary Native Americans include the protection of Indian burial grounds and other sacred sites and the perpetuation of certain traditional activities, specifically root gathering and fishing.

The Confederated Tribes of the Warm Springs are consulted by Federal, State, and local governments as required by the Archaeological Resources Protection Act (1979) and as recommended by the Historic Preservation Act (1966). The managing agencies also contact and consult with the appropriate Tribal representatives and Bureau of Indian Affairs agencies in the early stages of any project or activity planning on BLM, U.S. Forest Service, or State administered lands that may affect Tribal interests, treaty rights, or traditional use areas within ceded lands.

Oregon State Parks and Recreation

The Oregon State Parks and Recreation Department is responsible for administration of the State Scenic Waterways Program. Scenic Waterways are administered under the authority of the Oregon State Parks and Recreation Commission (ORS 390.805 to ORS 390.925). Administrative rules (OAR 736-40-005 to 736-40-095) have been adopted to govern the program. In addition to the general rules governing the program, specific rules are generated for the management of each river segment in the system. These rules are created through the management planning process tailored to the actions necessary to maintain the existing character of the designated river corridor.

The Act and the Commission's rules require the evaluation of proposed land use changes within 1/4 mile from each side of the river for their potential impacts on aesthetic and scenic values, as viewed from the river. Property owners wanting to build roads or houses, develop mines, harvest timber or begin other similar projects, must provide written notification to the Oregon State Parks and Recreation Department. The Department's evaluation of the project will be coordinated with the local jurisdiction and with other natural resource agencies, both federal and state, that have regulatory responsibilities. Using its river classifications and administrative rules, the State Parks and Recreation Department will determine if the proposed project or development is compatible or incompatible with the scenic waterway. The landowner may not begin the project until written approval has been given by the Department. The Department and/or the Commission will work with the landowner to reach a mutually satisfactory resolution of any conflicts. When a resolution cannot be reached within one year of the original notification, the Commission must either pay the property owner for the land or the development rights, or allow the project to go ahead.

State Parks works closely with Federal agencies such as the BLM and U.S. Forest Service to assure their actions are compatible with scenic waterway laws, rules, and resource management recommendations. In addition to working

with Federal agencies, the State Parks Department works closely with County planning staff and other State agencies to insure development on private lands is compatible with the river environment.

Oregon Department or Fish and Wildlife

The Oregon Department of Fish and Wildlife (ODFW) is responsible for the management and wise use of the State's fish and wildlife resources. The Department is charged with maintaining optimum numbers of indigenous fish and wildlife, and to ensure that no species are threatened with extinction. The Department is responsible for developing and administering fish and wildlife regulations. The ODFW, BLM, U.S. Forest Service, and other interested groups work cooperatively in riparian habitat enhancement projects, fish and wildlife enhancement projects, and Deschutes and Crooked River basin planning efforts. ODFW routinely monitors the Middle Deschutes and Lower Crooked River angling effort and harvest, as well as hunter effort and harvest.

Oregon Water Resource Department

The Oregon Water Resource Department (WRD) is responsible for management and allocation of the State's water resources. The Water Resource Commission typically develops policy through the preparation of basin plans for each of Oregon's 18 river basins. Through basin plans, the WRD classifies streamflow for certain purposes, such as domestic use, industry, municipal, recreation, or irrigation. The plans are adopted as administrative rules which reflect how water is currently used, and how its future use will be allocated. Three State departments may apply for these instream rights: Parks and Recreation, Fish and Wildlife, and Environmental Quality. Once granted, the instream water right is held by WRD in trust for the people of Oregon.

Division of State Lands

The Division of State Lands (DSL) is responsible for the management of the beds and banks of navigable waterbodies. DSL regulates removal, fill, or alteration of 50 cubic yards or more of material in all waterways (including lakes and wetlands) in the State. The DSL is also responsible for managing certain lands for their maximum benefit to the common school fund, consistent with best conservation practices.

Department of Environmental Quality

The Department of Environmental Quality (DEQ) is responsible for the implementation of the Statewide Water Quality Management Plan, which establishes standards of water quality for each of WRD's 18 basins in Oregon. Beneficial uses of rivers and streams that are to be protected by DEQ are: public, private, and industrial water supplies, irrigation, livestock watering, anadromous fish passage, salmonid rearing and spawning, resident fish and aquatic life, wildlife and hunting, fishing, boating, and aesthetic quality. Dissolved oxygen is to be kept to the highest possible levels. Temperature, bacteria, dissolved chemical substances, and toxic material are to be maintained at the lowest possible levels. The DEQ anti-degradation policy states that high quality waters are to be protected from degradation unless the Environmental Quality Commission finds it necessary to make an exception based on economic or social needs. DEQ also maintains water quality monitoring stations throughout Oregon.

State Marine Board

The State Marine Board registers motorized watercraft, establishes equipment and operating requirements for the safety of the environment, regulates the use of boats on Oregon waters, and provides training for county sheriffs and state police who patrol the waters. State

Marine Board regulations prohibit motorized craft on the Middle Deschutes River upriver from the Deschutes Arm of Lake Billy Chinook to Mirror Pond in Bend. This action and others are in accordance with Oregon Administrative Rules - Marine Board 250-20-091 and 250-20-161.

Oregon State Police

The Department of State Police was created to serve as a rural patrol and to assist local law enforcement agencies. This agency is empowered to enforce all Oregon statutes without limitation by county or other political subdivision. State Police activities are coordinated with local and Federal law enforcement agencies and assisted by the general public. For example, the TIP Program (Turn in Poachers) has been established in cooperation with the Oregon Department of Fish and Wildlife and the Oregon Hunter's Association. This program is designed to involve citizens in reporting wildlife law violations.

County Comprehensive Plans

The Omnibus Oregon Wild and Scenic Rivers Act of 1988, the Federal Land Policy and Management Act of 1976, and the National Environmental Policy Act of 1969 (as amended) all encourage or mandate intergovernmental coordination, consultation and, where possible, plan consistency. Since the Wild and Scenic Rivers Act envisioned a high reliance on local comprehensive plans to achieve the objectives of the Act, a review and analysis of the adequacy of the existing plans for Deschutes County was critical.

The comprehensive plans for Deschutes and Jefferson Counties have been acknowledged by the Oregon Land Conservation and Development Commission and are in conformance with statewide planning goals and objectives. Under Section 202 of the Federal Land Policy and Management Act all BLM and U.S. Forest Service plans, including Resource management Plans and site specific activity plans (such as the Middle Deschutes/Lower Crooked River Plan), must be consistent, insofar as possible, with officially approved or adopted State and local agencies' resource related plans, policies and programs. Similarly, State-managed land must conform to statewide planning goals and objectives and support local comprehensive plans.

Deschutes County

The Deschutes County Comprehensive Plan was acknowledged by the Land Conservation and Development Commission (LCDC) in 1979. The required periodic review and amendment process is currently underway and is expected to be completed by December 1992. The BLM, U.S. Forest Service, and State Parks and Recreation Department are coordinating efforts with Deschutes County to ensure consistency between planning efforts. Expected amendments or revisions may include changes in policy statements which have been superseded by Federal or State law.

The existing county plan includes lands 200 feet from the ordinary high water mark within the Middle Deschutes river corridor as a landscape management zone. Private lands upon the plateaus are zoned rural/residential. The plan's intent is to not allow actions which might permanently destroy natural value(s). There is also a "sensitive wildlife habitats overlay" with accompanying supplementary development standards to protect riparian corridors and fisheries habitat. The plan prescribes notification and coordination with state, and federal agencies when considering actions within the State Scenic Waterway. Visual resource protection considerations may restrict mineral development and sitting of structures. The plan goes

on to promote protection of many other resources that contribute to the uniqueness of the river corridor.

Deschutes County Emergency Services Plan coordinates available equipment and personnel resources for a wide variety of potential situations. This include search and rescue, hazardous material spills, and occasional enforcement of state and local laws on public lands within the Middle Deschutes river corridor through written law enforcement agreements with the BLM and the U.S. Forest Service.

In summary, the current Deschutes County plan provides a high degree of protection for river-related resource values. It supports long-term preservation of the Middle Deschutes river corridor.

Jefferson County

The Jefferson County Comprehensive plan was acknowledged by the LCDC to be consistent with Statewide planning goals in 1981. The required periodic review and amendment process is currently underway and is expected to be completed by December 1992. The BLM, U.S. Forest Service, and State Parks and Recreation Department are coordinating efforts with Jefferson County to ensure consistency between planning efforts. The amended plan will note federal designation and continue to provide adequate protection of State Scenic Waterway resources on segment 4 of the Middle Deschutes and
river-related resources on the Lower Crooked River. Protective measures include setbacks, without variances, for new construction on floodplains or near riparian areas and for homesites on the river rims. It is expected that structures near the rims will have mandatory setbacks of 100 feet in the future, compared to the current 35 foot setback, due to natural hazards from seismic events.

Jefferson County also provides enforcement of state and local laws on public lands within the Middle Deschutes and Lower Crooked River corridors through written law enforcement agreements with the BLM and the U.S. Forest Service.

In summary, the current Jefferson County plan provides a high degree of protection for river-related resource values. It is non-specific to river planning related public safety and service issues or potential solutions.

II. Alternatives

A. Introduction

This chapter presents and compares the five alternatives developed during the planning process. The alternatives each present a different comprehensive strategy for managing the Middle Deschutes and Lower Crooked River corridors. Management actions that are common to all alternatives are also presented. The Draft Preferred Alternative was developed as a result of public involvement and professional analysis of the other alternatives.

Before describing the alternatives, this chapter discusses seven key issues that formed the basis for developing the alternatives and describes alternatives that were considered during the planning process but rejected as a result of being outside the scope of the planning effort. Management goals, objectives, and desired future conditions that provide sideboards for management actions within each alternative are also discussed.

B. Issues

Seven key issues guided the development and evaluation of Middle Deschutes/Lower Crooked River management alternatives. These issues were established during the initial stages of work group participation and later during public scoping meetings. The seven key issues presented in this section were formulated by consolidating similar issues into like categories after ensuring that issues were within the legal authority of the managing agencies, that all issues had a variety of options, and that the issues had some kind of public controversy.

Issue 1 - How should recreation opportunities be managed?

Many recreationists and private landowners are concerned about preserving the natural character of the rivers. Others are more concerned about the type of recreation opportunities that will be allowed and how associated social changes will affect their personal experience within the river corridors. They are also concerned about management actions that promote increased demand for recreation within the river corridors and how it could result in crowding, increased conflict among recreation visitors, unacceptable levels and types of impact to the landscape, and increased incidents of wildfire.

General areas of concern include: impacts to resources and private landowners from motorized and non-motorized access, level and type of recreation development, how commercial recreation should be managed, and how extensive the information and education program should be. Some recreation users desire increased access and level of development with an unlimited ability to enter into their preferred recreation activity. Other users prefer to limit access and recreation development to promote more primitive recreation opportunities while enhancing the natural characteristics of the area.

Issue 2 - How should private landowners and the local, state, and federal management agencies cooperate in visitor and resource management of the river corridors?

Many private landowners within the river corridors are concerned about the managing agencies ability to resolve problems related to

wild and scenic river designation. Private landowners question whether federal designation will result in increased popularity of the area's recreation resources and increased incidents of trespass, litter, vandalism, and wildfire on their property. In addition, landowners are concerned that they will lose the right to manage their land as they see fit by impacting traditional practices such as grazing, agriculture, and construction of private developments. Other concerns include the level of law enforcement and the effects of management on zoning, subdivision, and value of private land.

Concern has also been voiced whether coordination among local, state, and federal government agencies is adequate enough to ensure protection of river resources and continued cooperation with private landowners. Overall, private landowners desire the ability to clearly understand each managing agency's role in the river corridors.

Issue 3 - How should cultural, historical, and traditional use resources be managed?

Cultural and historical resources within the river corridors have been threatened by vandalism and uncontrolled recreation use for many years. Native American representatives and special interest groups are concerned that these and other undiscovered cultural resources may lose the ability to contribute to the understanding and interpretation of the past. In addition, many have expressed opposition to recreational use of these areas, while others are very interested in encouraging interpretation of existing, intact sites on public and private land.

Traditional use resources are also an issue. Some specific areas are considered important for spiritual and other traditional practices. Native American representatives consider both river corridors important for continuing cultural practices such as gathering foods, medicinal plants, and other materials.

Issue 4 - How should aquatic and riparian resources be managed?

Concern has been voiced regarding the adequacy of existing local, state, and federal mechanisms to provide long-term protection for aquatic and riparian resources on the Middle Deschutes and Lower Crooked River corridors. Even though the rivers are free-flowing, aquatic and riparian resources remain dependent upon flow releases from dams and canal diversions upstream. Many are also concerned about the effects from use of pesticides, septic systems, and other land uses upstream that degrade water quality within both river corridors. Water is the "Life Blood" of Central Oregon. Therefore, all related issues are very important to consumptive and non-consumptive users of the resource. Canal lining projects and conducting instream flow studies are important tools that will be used to provide valuable information to help guide the future of aquatic and riparian resources.

Some people fear that with increased public access and publicity, the fishery resource will suffer, directly from fishing pressure and indirectly from other recreation activities. The fish resource was identified as one of the river's outstandingly remarkable values.

Issue 5 - How should vegetation and wildlife habitat be managed within the corridors?

Preservation of scenic quality is of concern, especially given the naturalness of the steep slopes that enclose the river. Vegetation management practices that effect scenic quality such as fire, mosaic juniper thinning, livestock grazing, and use of chemicals are all subject to differing points of concern. Most individuals question the ability of existing mechanisms to respond in a way that will ensure long-term protection of upland resources.

Another area of concern in the uplands is the increase in recreation use and how it has resulted in increased wildlife disturbance and

Spring activity is abundant in both river corridors

displacement. Poaching and casual shooting also contribute to this problem.

Issue 6 - How should commercial resource uses be managed?

Recreationists and private landowners alike are concerned about commercial use impacts on scenery and other river related resources. The issue generally revolves around river corridor experience and mineral material need for the expanding central Oregon area. Specific concerns include visual inconsistencies to the landscape, noise and dust, wildlife disturbance, and potential degradation of water quality. Scenic resources were identified as an outstandingly remarkable value.

Issue 7 - Where should the final Middle Deschutes/Lower Crooked Wild and Scenic River boundaries be located?

During the public review period for scoping issues many people, including work group members, requested that the preliminary boundaries be reconsidered. Some were concerned that the preliminary boundary didn't adequately encompass scenic resources, while others desired to move the boundary away from their private property. The intent of the boundary is to include as many areas as possible that contain or directly support the identified outstandingly remarkable values associated with the river.

C. Management Goals, Objectives, and Desired Future Conditions

Management Goals

The overall goal of the management plan of the river area is to meet the intent of the Wild and Scenic Rivers Act by maintaining the current character of the river area, and providing long-term protection and enhancement of its outstandingly remarkable values.

Four additional goals were developed as a result of public involvement. They include:

1. Maintain the economic viability of resource uses consistent with protection and enhancement of outstanding and significant resource values.

2. Protect and enhance instream and land-based biological, cultural and physical resources.

3. Provide for appropriate recreational use and appropriate public access while maintaining the wild and scenic nature of the river.

4. Foster cooperation among landowners, managing agencies, and the public to manage and enhance the outstandingly remarkable river values.

Segment Objectives

Segment 1 - Manage as a "River Community Area" between Sawyer Park and the Urban Growth Boundary of Bend. Manage as a "Recreation River Area" between the Urban Growth Boundary and Tumalo State Park.

Segment 2 - Manage as a "Scenic River Area" between Deschutes Market Road and Odin Falls.

Segment 3 - Manage as a "Scenic River Area" between Odin Falls and Lower Bridge with emphasis of semi-primitive motorized experiences. Manage as "Scenic River Area" between Lower Bridge and the southernmost boundary of the Wilderness Study Area (WSA) with emphasis of semi-primitive non-motorized experiences.

Segment 4 - Manage as a "Natural River Area" between the southernmost boundary of the WSA and Lake Billy Chinook with emphasis of semi-primitive non-motorized experiences, except between river miles 130.5 and 131.7 where it would be managed as a "River Community Area". Special areas of access would occur at Geneva Overlook and Steelhead Falls trailhead area.

Lower Crooked Segment - Manage as a "Natural River Area" along the entire corridor with emphasis of semi-primitive non-motorized experiences between rims and roaded natural experiences on top of the rim plateaus. Recommend as State Scenic Waterway.

Desired Future Conditions

Desired future conditions present a vision of the desired future state of a specific area. The desired future conditions that follow were developed for the Middle Deschutes/Lower Crooked River corridors after public scoping by work group and interdisciplinary team members.

Scenic - A combination of appropriately screened developments, varied plant communities, seasonal river and spring flows supporting an abundance of wildlife, and varied depths of undisturbed canyon walls leave these corridors in relatively pristine condition.

Recreation - The river corridors are managed for a variety of semi-primitive recreation opportunities with developed recreation opportunities available in specific areas. Access is main-

tained to facilitate recreation opportunities while protecting resource values.

Geology/Minerals - Geologic formations that support scenic river values are protected. Mineral extraction continues to be in compliance with State and County ordinance.

Prehistoric, Historic, and Traditional - The river corridors have been surveyed for cultural resources. Preservation through protection, enhancement and interpretation of cultural sites, and recognized traditional use locations continue to be managed for their values and religious importance.

Hydrologic - Water quality and quantity maximize other resource values, exceed Federal and State standards and continue to fulfill agricultural and domestic need. Unique hydrologic features that support scenic river values are protected and enhanced.

Fishery - Seasonal flows support quality habitat for fish and aquatic organisms. The habitat is in optimum condition for natural diverse fish production.

Wildlife - Native wildlife populations are healthy and abundant. The habitat is in optimum condition for natural diverse wildlife production.

Botanical/Ecological - Native upland and riparian vegetation communities are in outstanding condition lending to significant biological diversity within the corridor.

Game trails along the Middle Deschutes are followed with little difficulty and provide adequate access for hiking and backpacking

D. Alternatives Considered but Eliminated From Further Review

Alternatives identified during initial scoping and alternative development were examined for feasibility. Some of these alternatives no longer seemed to be useful or fell outside the scope of the planning effort. The most important of these are identified below.

Development Extremes

Although the alternatives differ in the level and type of recreation facilities and access developments, no alternative calls for significantly changing the river corridors to highly developed settings. Some users showed interest is constructing new use trails in areas not currently experiencing much visitor use. Another interest in trail development included a contiguous trail from Odin Falls to Lake Billy Chinook along the Middle Deschutes River. Interest in other developments included constructing dispersed campgrounds at major motorized access points and providing an interpretive center on the Middle Deschutes River. These developments were considered but dismissed because they would encourage much higher use levels and significantly change the type of use that the corridors currently experience. No public or work group comments were received that favored such an approach to this type of recreation management. In addition, the interdisciplinary team judged this to be inappropriate based on the opportunities the corridors currently provide and the potential for impact to other valuable resources.

Boundary Delineation

Comments during the planning process focused on two main areas of boundary change. One included expanding the upstream terminus boundary of the Lower Crooked River to Smith Rock State Park. It is possible to request Congress to grant a terminus boundary based on protection or inclusion of outstandingly remarkable values. This change was briefly analyzed and dismissed as a result of inadequately meeting the outstandingly remarkable value criteria required by Congress to designate rivers as wild and scenic.

The second focus on boundary change included suggestions that would redirect boundary lines away from private lands within the wild and scenic river corridor. Some private landowners were concerned that the boundaries would effect what they can and cannot do on their lands. Although the federal managing agencies are Congressionally mandated to manage public lands, they have no authority for regulating what occurs on private land. The purpose of these boundary lines is to include outstandingly remarkable values and help focus cooperative effort with private landowners to promote land management consistency within the corridors. As a result, reduction of the boundaries to exclude private lands within the river corridors was not pursued further.

E. Description of Alternatives

Many alternatives for managing the Middle Deschutes and Lower Crooked River corridors could be developed which would adequately provide the protection of river values required by the Wild and Scenic Rivers Act. Together as a whole, the alternatives represent a reasonable range that address issues identified during the planning process. This chapter presents and compares the five alternatives developed during the planning process in detailed comparison format. Alternative themes have been developed for each of these alternatives and are described below. Appendix F provides maps for a summary representation of the alternatives.

Alternative Themes

Alternative 1 (No Action) Continue current management direction for federal lands within the both wild and scenic river corridors.

Alternative 2 This alternative would allow for maximum multiple use in the corridors with an emphasis on increasing recreation opportunities. A variety of different resource enhancement projects would take place to resolve resource problems. Coordination would occur to minimize effects on landowners and land use practices.

Alternative 3 Management would be much like Alternative 2, except management under this alternative would focus on increased resource protection and development of centralized use areas while providing for semi-primitive recreation opportunities. Resource enhancement projects would need to be natural in appearance.

Alternative 4 This alternative would increase the naturalness of the lands within the river corridors. The overall management goal would be not just to maintain, but to enhance river corridor values, and provide opportunities for primitive recreational use and development compatible with resource enhancement objectives.

Alternative 5 (Draft Preferred) The goal of Alternative 5 is to maintain and/or enhance the current character of the river corridors while rehabilitating degrading resources and providing long-term protection and enhancement of its outstandingly remarkable values. Coordination would occur to minimize effects on landowners and land use practices.

Issue 1	Alternative 1 (No Action)	Alternative 2
How should recreation opportunities be managed?	**Recreation Opportunities:** Recreation opportunities that exist within Segments 3, 4, and the Lower Crooked River Segment would be available throughout most of the year (refer to Chapter 3, Affected Environment). Public lands within the river canyons would be managed for semi-primitive non-motorized recreation opportunities. Public lands on plateaus within the river corridor boundaries would be managed for both semi-primitive motorized and roaded natural recreation opportunities. On public lands within both river corridors, firewood gathering is allowed for on-site use only. Campfires and collection of personal use firewood on all other public lands within both river corridors would be allowed with standard restrictions. Existing laws regulating use of firearms on public lands would remain in effect. Special laws regulating use of firearms would be contingent upon ODFW management decisions.	**Recreation Opportunities:** Semi-primitive non-motorized recreation opportunities would be emphasized on public lands between the canyon rims and roaded natural recreation opportunities would be emphasized upon the plateaus. Implement a fire closure between June 1 and October 15 on all public lands within both river corridors. Campfires in fire grates, use of charcoal, and smoking in open areas would be allowed only in designated campgrounds. If determined necessary, the fire closure could be extended based on fireweather conditions. During the open campfire season, metal fire pans would be encouraged where fire grates are not available. Collection of firewood for on-site campfires and personal use firewood would be allowed with standard restrictions. Existing laws regulating use of firearms on public lands would remain in effect. Special laws regulating use of firearms would be contingent upon ODFW management decisions.
	Motorized Access: Year-round motorized vehicle access on about 9 miles of roads would continue to be provided on existing vehicle routes on BLM and state managed public lands in Segments 3, 4, and the Lower Crooked River Segment. Motorized vehicle access within the Steelhead Falls Wilderness Study Area would remain limited to existing roads. Approximately 4 miles of roads on National Grasslands would be managed according to the existing Forest Travel Plan. Some roads would be closed on a seasonal basis to protect soil, watershed, and/or wildlife values. New motorized public access to parcels of public land could be provided through easements, acquisition, and/or agreements with willing landowners if found necessary to protect and enhance river related resource values.	**Motorized Access:** Motorized vehicle access would be limited to approximately 14 miles of designated vehicle routes throughout the year in Segments 3, 4, and within the Lower Crooked River Segment. Motorized access upon 3 miles of National Grassland roads would remain subject to seasonal closures. Approximately 9 miles of primary access routes on public lands within these segments would be graveled and maintained regularly. Other access routes experiencing resource degradation would be stabilized through occasional maintenance. Easements, acquisition, and/or agreements with willing landowners would be pursued to facilitate legal motorized access into heavily used areas on public land along the plateaus. Refer to Appendix F for vehicle access into and within the river corridor.

Alternative 3	Alternative 4	Preferred Alternative
Recreation Opportunities: Semi-primitive non-motorized recreation opportunities would be emphasized on public lands between the canyon rims and semi-primitive motorized recreation opportunities would be emphasized upon the plateaus. Campfire restrictions would be the same as Alternative 2, except campfires would not be allowed in developed campgrounds during fire closure season. Collection of personal use firewood would not be allowed. Encourage ODFW to change regulations to allow discharge of firearms and hunting within both river corridors only during official State waterfowl, big game, and upland game seasons. BLM and the National Grasslands would also establish a supplementary rule (43 CFR, Part 8360) to prohibit discharge of firearms on public lands within the wild and scenic river boundaries except during these open seasons. Federal and State Firearm use rules would continue to remain in affect during these open seasons.	**Recreation Opportunities:** Semi-primitive non-motorized recreation opportunities would be emphasized on public lands between the canyon rims and in areas upon the plateaus where designated roads do not exist. Semi-primitive motorized recreation opportunities would be emphasized in all other areas upon the plateaus. Campfires and collection of personal use firewood would be prohibited year-round on public lands in both river corridors. Encourage ODFW to prohibit discharge of firearms, hunting, and trapping on public lands in both river corridors. BLM and the National Grasslands would also pursue a supplementary rule (43 CFR, Part 8360) that prohibits discharge of firearms on public lands within the wild and scenic river boundaries.	**Recreation Opportunities:** Semi-primitive non-motorized recreation opportunities would be emphasized on public lands between the canyon rims and semi-primitive motorized recreation opportunities would be emphasized upon the plateaus. Implement a fire closure between June 1 and October 15 on all public lands within both river corridors. If determined necessary, the fire closure could extended based on fireweather conditions at that time. During the open campfire season, metal fire pans would be encouraged where fire grates are not available. Collection of firewood for on-site campfires would be allowed during open fire season. Collection of personal use firewood would not be allowed. Encourage ODFW to change regulations to allow discharge of firearms and hunting within both river corridors only during official State waterfowl, big game, and upland game seasons. BLM and the National Grasslands would also establish a supplementary rule (43 CFR, Part 8360) to prohibit discharge of firearms on public lands within the wild and scenic river boundaries except during these open seasons. Federal and State Firearm use rules would continue to remain in affect during these open seasons.
Motorized Access: Same as Alternative 2, except 4 miles of vehicle routes not needed to access designated recreation sites and trailheads would be closed and rehabilitated. Motorized vehicle access would be limited to 9 miles of designated vehicle routes, of which 3 miles would remain subject to seasonal closure on the National Grasslands.	**Motorized Access:** Same as Alternative 3, except approximately 9 miles of vehicle routes on public lands not needed to access designated recreation sites and trailheads would be closed and rehabilitated, leaving 4 miles of roads open to motorized vehicle use within the river corridors. Scout Camp and Steelhead Falls campgrounds would have only one designated access road.	**Motorized Access:** Motorized vehicle access would be limited to approximately 8.5 miles of designated vehicle routes on public lands throughout the year in Segments 3, 4, and within the Lower Crooked River Segment. Motorized access upon 2.8 miles of National Grassland roads would remain subject to seasonal closures. Approximately 9 miles of primary access routes on public and private lands within these segments would be graveled or maintained regularly (see Appendix F). Other access routes experiencing resource degradation would be stabilized through occasional maintenance. New motorized public access to parcels of public land could be provided through easements, acquisition, and/or agreements with willing landowners if found necessary to protect and enhance river related resource values. Scout Camp and Steelhead Falls campground areas would have only one access road.

Issue 1	Alternative 1 (No Action)	Alternative 2
How should recreation opportunities be managed? (cont)	**Non-Motorized Access:** Visitor access into Segments 3, 4 and the Lower Crooked River would be facilitated by wildlife and user developed trails and historic roads that are closed to motorized use. Existing trails would be stabilized and improved as necessary to protect soil and watershed. The 0.5 mile Steelhead Falls Trail would also be stabilized using natural appearing stabilization methods to protect from further resource degradation. The proposed 3 mile Squaw Creek Trail would be developed within the next ten years from Alder Springs, located outside the river corridor boundary, east to the confluence with the Middle Deschutes. All public lands within both river corridors would be open to mountain bike and horse use. These activities would be monitored to ensure compliance to management goals.	**Non-Motorized Access:** Same as Alternative 1, except existing non-motorized casual use trails within the riparian and upland areas experiencing heavy degradation would be re-routed and rehabilitated. Off trail use would not be encouraged. Horse and mountain bike use would be encouraged to remain on existing roads and trails. Approximately 2.25 miles of the Steelhead Falls, Scout Camp, and Geneva Overlook user defined trails would be developed and about .75 miles along the existing Civilian Conservation Corps (CCC) Trail would be reconstructed. The user defined Squaw Creek Trail and Hollywood Trail, totalling 4.5 miles, would be developed or reconstructed if easements, acquisitions, or agreements from willing landowners are obtained for non-motorized public access. Land along these two trails would be in approximately 75 percent public and 25 percent private ownership. The Lower Bridge Trail, Kidder Trail and the connecting trail between Steelhead Falls and the CCC Trail would be new trails developed within the Deschutes River corridor. These trails total approximately 11.25 miles and would be developed only if easements, acquisitions, and/or agreements from willing landowners are obtained for non-motorized public access. Land along these trails would be in approximately 75 percent public and 25 percent private ownership (see Appendix F).

Alternative 3	Alternative 4	Preferred Alternative
Non-Motorized Access: Same as Alternative 1, except approximately 1.5 miles of the Steelhead Falls user developed trail and the existing CCC Trail would be reconstructed. About 4.5 miles of the Lower Bridge Trail and Hollywood Trail would also be designed and developed to encourage trail use (see Appendix F). These trails would be developed only if easements, acquisitions, and/or agreements from willing landowners are obtained for non-motorized public access. Land along these two trails would be in approximately 35 percent public and 65 percent private ownership. Scout Camp Trail, Geneva Point Trail, and other informal network trails would remain user developed. Unnecessary trail networking would be re-routed and rehabilitated based on resource degradation. Use of horses and mountain bikes would be limited to designated roads and trails within both river corridors.	**Non-Motorized Access:** Same as Alternative 3, except all trails on public lands within both river corridors would remain user developed. The CCC Trail would not be reconstructed. Mountain bikes would be limited to designated roads within the river corridors. All public lands within both river corridors would be open to horse use.	**Non-Motorized Access:** The Geneva Point Trail, and other informal network trails would remain primarily user developed. Unnecessary trail networking would be re-routed and rehabilitated. Mountain bike and horse use on the upland plateaus would be encouraged to occur on developed or user developed trails. Except in designated use areas within the riparian zone, horse use would be encouraged to occur on developed and user developed trails in the canyon areas. Mountain bike use would not be allowed within the canyon areas. The 0.5 mile Steelhead Falls Trail would be stabilized using natural appearing stabilization methods to protect from further resource degradation. The existing .75 mile CCC Trail would be reconstructed. Scout Camp, Squaw Creek and Hollywood Trails, totalling 4.75 miles, would be designed and developed to encourage trail use (see Appendix F). These trails would be developed only if easements, acquisitions, and/or agreements from willing landowners are obtained for non-motorized public access. Land along these trails would be in approximately 70 percent public and 30 percent private ownership.

Issue 1	Alternative 1 (No Action)	Alternative 2
How should recreation opportunities be managed? (cont)	**Recreation Development:** The Steelhead Falls Trail trailhead and camping area would remain semi-primitive, with information signs and trash cans unless resource degradation dictates a need for sanitation facilities or other basic site protection measures. Scout Camp could also receive this same resource protection if determined necessary. Deschutes County may develop camping and/or day use facilities at Lower Bridge. A trailhead would be developed at Geneva Overlook. Although located outside of the river corridor boundary, three scenic overlooks managed by the Crooked River Ranch Community would remain an important element of recreation on the Lower Crooked Segment. No other recreation development would occur within Segments 3, 4, or the Lower Crooked River Segment.	**Recreation Development:** Moderate sized campgrounds with traditional campground facilities, designated use sites, and interpretative signs would be developed at Lower Bridge, Scout Camp, and Steelhead Falls camping areas. Trailheads would be developed with interpretive signs and kiosks at all proposed developed trails. Scenic overlooks would be developed adjacent to trailhead parking areas at Lower Bridge, Steelhead Falls, Geneva Point, and Scout Camp. In cooperation with State Parks and Madras/Redmond Chamber of Commerce develop a Wild and Scenic River interpretative display at Ogden State Wayside information center. The managing agencies would pursue a cooperative management agreement with Crooked River Ranch to help manage and maintain the existing scenic overlooks along the Lower Crooked River.
	Commercial Recreation Use: Commercial use within Segments 3, 4, and the Lower Crooked River Segment would remain as is currently managed by the BLM and USFS. Special land use and concessions requests would require a special land use permit. Commercial guides and outfitters would be required to obtain a Special Recreation Use Permit. Commercial recreation use would be limited if found necessary to protect and enhance outstandingly remarkable values.	**Commercial Recreation Use:** Same as Alternative 1.

Alternative 3	Alternative 4	Preferred Alternative
Recreation Development: Semi-primitive campgrounds with toilets, picnic tables, and trash cans would be developed at Steelhead Falls and Scout Camp. Trailheads with information signs would be developed at all proposed developed trails. Semi-primitive trailheads for high use casual trails would be maintained at Lower Bridge, Scout Camp, Geneva Point, Gorge Trail and the CCC Trail. In cooperation with State Parks, and Madras/Redmond Chamber of Commerce develop a Wild and Scenic River interpretative display at Ogden State Wayside information center. The managing agencies would pursue a cooperative management agreement with Crooked River Ranch to help manage and maintain the existing scenic overlooks along the Lower Crooked River.	**Recreation Development:** Semi-primitive walk-in campgrounds with toilets would be developed at Steelhead Falls and Scout Camp. Each of these areas would have only one designated access road. Parking areas would be developed at the end of these roads adjacent to the wild and scenic river corridor boundary. The Steelhead Falls Trail, Geneva Point Trail, and other informal network trails and trailheads would remain user developed with occasional maintenance. Existing scenic overlooks on the Lower Crooked River would remain managed by the Crooked River Ranch. No other recreation development would occur on public lands within the river corridors.	**Recreation Development:** The Steelhead Falls Trail trailhead and camping area would remain semi-primitive, with information signs and trash cans unless resource degradation dictates a need for sanitation facilities or other basic site protection measures. Scout Camp would also receive this same resource protection if determined necessary. Trailheads with information signs would be developed at all proposed developed trails. Semi-primitive trailheads for casual use trails would be maintained at Lower Bridge and Geneva Point. Small interpretive signs, emphasizing minimum impact of public lands, would be installed in key access areas within both corridors. In cooperation with State Parks, and Madras/Redmond Chamber of Commerce develop a Wild and Scenic River interpretative display at Ogden State Wayside information center. The managing agencies would pursue a cooperative management agreement with Crooked River Ranch to help manage and maintain the existing scenic overlooks along the Lower Crooked River.
Commercial Recreation Use: Same as Alternative 1, except commercial use would be limited to Segment 4 on the Middle Deschutes River.	**Commercial Recreation Use:** Exclude commercial recreation use within the two corridors.	**Commercial Recreation Use:** Commercial use within Segments 3, 4, and the Lower Crooked River Segment would remain as is currently managed by the BLM and USFS. Special land use and concessions requests would require a special land use permit. Commercial guides and outfitters would be required to obtain a Special Recreation Use Permit. Commercial recreation use would be limited if found necessary to protect and enhance outstandingly remarkable values.

Issue 2	Alternative 1 (No Action)	Alternative 2
How should private property owners and the local, state and federal management agencies cooperate in visitor and resource management of the river corridors?	**Trespass:** Private landowners remain responsible for posting private property signs and calling local authorities when trespass occurs. Trespass occurring as a result of public land management would be addressed on a case-by-case basis. Public land access would be managed to discourage unauthorized access to private lands. New access routes and easements over private land could be pursued if found necessary to appropriately maintain outstandingly remarkable values and/or reduce trespass problems.	**Trespass:** Same as Alternative 1, except implement user education tools such as brochures and information signs on public land to help reduce trespass. Private landowners remain responsible for posting private property signs and contacting the local authorities if trespass occurs.
	Land Use Regulations: The BLM and National Grasslands would continue to work with Jefferson and Deschutes Counties, State Parks, and private landowners in efforts to protect river values on private property through zoning and land use regulations (see Appendix C and Chapter 6). The BLM and National Grasslands would grant no special use rights-of-way that would have a direct and adverse effect on the outstandingly remarkable values. Within the Metolius Deer Winter Range, the National Grasslands would grant rights-of-way only where there are no alternate routes. All public land use permits would be evaluated on case-by-case basis to ensure protection of outstandingly remarkable values.	**Land Use Regulations:** Same as Alternative 1, except a centrally located information office would be created so that river residents could easily access land use regulations, zoning laws, and federal river regulations. A memorandum of understanding between local, state, and federal agencies would ensure coordination during formulation of new zoning ordinances and land use regulations. Streamline the permitting process for private landowners for building approval within the corridors. The BLM and USFS would support the county review process for proposed land uses within Segments 3, 4 and the Lower Crooked River Segment. Acquisitions, easements, or cooperative agreements could occur as a means to resolve land use conflicts.
	Litter and Vandalism: Existing trash facilities at Steelhead Falls campground would remain in place. Vandalism would be addressed through signing and occasional law enforcement patrols.	**Litter and Vandalism:** Same as Alternative 1, except interpretive kiosks and signs would be installed in high use areas to promote better land use ethics. Toilets and trash cans would be installed in campgrounds, trailheads and other high use areas experiencing sanitation problems or significant resource degradation. Utilize seasonal employees to help educate public land users while working with private land owners to resolve specific trespass problems. Increase law enforcement presence.

Alternative 3	Alternative 4	Preferred Alternative
Trespass: Same as Alternative 2, except wild and scenic river boundaries would be surveyed and posted in heavy conflict areas focusing on convergence of private and public lands. Managing agencies would assist private landowners by identifying and signing heavy use areas on public lands adjacent to private land. A "hotline" for reporting vandalism, trespass, and other related problems would be implemented.	**Trespass:** Same as Alternative 3.	**Trespass:** Implement user education tools such as brochures and information signs on public land to help reduce trespass. Wild and scenic river boundaries would be surveyed and posted in heavy conflict areas focusing on convergence of private and public lands. Managing agencies would assist private landowners by identifying and signing heavy use areas on public lands adjacent to private land. Private landowners remain responsible for contacting the local authorities if trespass occurs.
Land Use Regulations: Same as Alternative 2, except a citizens committee would be developed to streamline the permitting process by acting as a single source for land use actions within the river corridors.	**Land Use Regulations:** Same as Alternative 3.	**Land Use Regulations:** The BLM and National Grasslands would continue to support Jefferson and Deschutes counties, State Parks, and private landowners in efforts to protect river values on private property through zoning and land use regulations (refer to Appendix C and Chapter 6). The BLM and National Grasslands would grant no special use rights-of-way that would have a direct and adverse effect on river values. Within the Metolius Deer Winter Range, the National Grasslands would grant rights-of-way only where there are no alternate routes. All public land use permits are evaluated on case-by-case basis to ensure protection of outstandingly remarkable values. Acquisitions, easements, or cooperative agreements could occur as a means to resolve land use conflicts.
Litter and Vandalism: Same as Alternative 2, except the managing agencies would not emphasize seasonal employees.	**Litter and Vandalism:** Same as Alternative 3, except signing of private lands would occur in severe problem areas identified through monitoring and complaints.	**Litter and Vandalism:** Interpretive kiosks and signs would be installed in high use areas to promote better land use ethics. Toilets and trash cans would be installed in campgrounds, trailheads and other high use areas experiencing sanitation problems or significant resource degradation. Increase law enforcement presence.

Issue 2	Alternative 1 (No Action)	Alternative 2
How should private property owners and the local, state and federal management agencies cooperate in visitor and resource management of the river corridors? (cont)	**Emergency/Educational Services:** Present levels of fire suppression, fire prevention, and emergency services would continue. BLM and National Grasslands would be responsible for fire suppression and regulation signing on public lands within the corridors. Cooperation between all fire management agencies within and adjacent to the wild and scenic river corridors would occur through the Central Oregon Cooperative Fire Management Plan. Resource education would continue through volunteer events, local displays, distribution of brochures, and other public outreach strategies.	**Emergency/Educational Services:** Same as Alternative 1, except provide technical assistance to private landowners in planning prescribed burns to reduce fire hazard. Coordination with county fire permit information centers would occur to provide consistency between public land open fire closures and burning on private lands. Develop a cooperative search and rescue plan with local, county, state, and federal agencies and hospitals. Install easy to read signs with regulations and resource information clearly visible in high use areas.

Alternative 3	Alternative 4	Preferred Alternative
Emergency/Educational Services: Same as Alternative 2, except managing agencies would distribute to libraries and local agencies education devices such as videos, books, and brochures with river related resource protection, fire, and building permit information. A newsletter would be distributed annually to relay information such as volunteer projects in the area, funding needs, landowner/agency workshops and when the citizen committee gets together.	**Emergency/Educational Services:** Same as Alternative 3.	**Emergency/Educational Services:** Present levels of fire suppression and emergency services would continue. BLM and USFS would be responsible for fire suppression and regulation signing on public lands within the corridors. Install easy to read signs with regulations and resource information clearly visible in high use areas. Resource education would continue through volunteer events, local displays, distribution of brochures, and other public outreach strategies. Cooperation between all fire management agencies within and adjacent to the wild and scenic river corridors would occur through the Central Oregon Cooperative Fire Management Plan. Provide technical assistance to private landowners in planning prescribed burns to reduce fire hazard. Coordination with county fire permit information centers would occur to provide consistency between public land fire closures and burning on private lands. Develop a cooperative search and rescue plan with local, county, state, and federal agencies and hospitals.

Issue 3	Alternative 1 (No Action)	Alternative 2
How should cultural, historical, and traditional use resources be managed?	**Management:** Federal or State acquisition to protect significant cultural properties on private lands within the corridors is a management option but is not actively pursued. Large scale inventories would not be emphasized.	**Management:** Limited Federal or State acquisition to protect significant cultural properties on private lands within the corridors would be pursued. Protection of cultural properties would be achieved through acquisition of fee title, easement, or cooperative agreement with willing landowners. Managing agencies would promote protection of cultural resources on private lands within the corridors using landowner incentive programs. Systematic, segment-by-segment inventories would be conducted by each land managing agency on public land within the corridors and on private land with landowner consent.
	Recreation Use: Cultural resources would continue to be protected, stabilized, or preserved in areas where high levels of recreation occur on public land.	**Recreation Use:** Same as Alternative 1, except public use would be encouraged in non-culturally sensitive areas as a protective measure. High use areas would be designed to route access away from significant cultural resource sites. Recreation use would be prohibited in sites where impacts could not be avoided.
	Vandalism: Increase public awareness and appreciation for cultural resources and solicit the public's support in the protection of those resources through outreach and education programs. Detection of damage would trigger mitigation activities and/or law enforcement investigations. The monitoring program would be limited to known cultural resource sites with both agency personnel and volunteers assisting. Current site condition would be recorded and changes noted.	**Vandalism:** Same as Alternative 1, except promote public appreciation of cultural resources and awareness of the significance of protecting these resources by installing interpretation facilities in campgrounds and trailhead areas as defined under Issue 1.

Alternative 3	Alternative 4	Preferred Alternative
Management: Same as Alternative 2, except Federal or State acquisition to protect significant cultural properties on private lands within the corridors would be actively pursued with willing landowners for unprotected cultural resource sites on private lands that are in imminent danger. Additionally, the BLM, USFS, and State Parks would coordinate efforts to conduct a comprehensive inventory of lands within the corridor boundaries.	**Management:** Same as Alternative 2, except protection for all National Register eligible properties on private lands within the corridors would be pursued with willing landowners.	**Management:** Limited Federal or State acquisition to protect significant cultural properties on private lands within the corridors would be pursued. Protection of cultural properties would be achieved through acquisition of fee title, easement, or cooperative agreement with willing landowners. Managing agencies would promote protection of cultural resources on private lands within the corridors using landowner incentive programs. The BLM, USFS, and State Parks would coordinate efforts to conduct a comprehensive inventory of lands within the corridor boundaries.
Recreation Use: Access and interpretation of cultural resource sites on public lands with high educational value would be provided subsequent to appropriate mitigating measures. All other sites would continue to be managed as defined under Alternative 2.	**Recreation Use:** Same as Alternative 3.	**Recreation Use:** Cultural resources would continue to be protected, stabilized, or preserved in areas where high levels of recreation occur on public land. Public use would be encouraged in non-culturally sensitive areas as a protective measure. High use areas would be designed to route access away from significant cultural resource sites. Recreation use would be prohibited in sites where impacts could not be mitigated or avoided. Access and interpretation of cultural resource sites on public lands with high educational value would be provided subsequent to appropriate mitigating measures.
Vandalism: Same as Alternative 2, except a comprehensive monitoring plan would be implemented. Special emphasis would be placed on those sites that are most vulnerable to impacts.	**Vandalism:** Same as Alternative 2.	**Vandalism:** Increase public awareness and appreciation for cultural resources and solicit the public's support in the protection of those resources through outreach and education programs. Detection of damage would trigger mitigation activities and/or law enforcement investigations. Promote public appreciation of cultural resources and awareness of the significance of protecting these resources by installing interpretation facilities in campgrounds and trailhead areas as defined under Issue 1. A comprehensive monitoring plan would be implemented. Special emphasis would be placed on those sites that are most vulnerable to impacts.

Issue 4	Alternative 1 (No Action)	Alternative 2
How should aquatic and riparian resource values be managed?	**Water Quantity and Quality:** Refer to the Aquatic and Riparian Resources section of the Management Actions Common to All Alternatives. **Fisheries:** Both the Middle Deschutes and Lower Crooked Rivers would be managed in cooperation with ODF&W as "wild trout" fisheries. Fish habitat in riparian areas would be managed for maximum populations of brook and rainbow trout where potential exists. Fish habitat would be restored on a project by project basis. Population and habitat surveys would be conducted as needed. **Riparian:** Stream bank erosion control, diversions, and other bank protection structures would be allowed if they enhance river resources, reduce existing impacts, and are natural in appearance. Facilities would not be developed in riparian areas unless no other alternative exists. Grazing and mechanical vegetation manipulation methods may be used to control noxious weeds. Limited livestock grazing would continue on BLM public lands in very localized riparian areas along the Middle Deschutes as long as the ecological condition could be maintained to meet full vegetative potential. No livestock grazing would be allowed in riparian areas along the Middle Deschutes and Lower Crooked Rivers on National Grasslands.	**Water Quantity and Quality:** Refer to the Aquatic and Riparian Resources section of the Management Actions Common to All Alternatives. **Fisheries:** Cooperate with ODF&W in fish management while focusing on resident fish habitat protection projects and long-term basin planning. Recommend that no new fish habitat structures or modifications be allowed within the high water channel unless they enhance river related resources and free-flow standards. Encourage ODF&W to provide fish passage in artificial barrier areas where passage has been determined to be suitable to protect and enhance outstandingly remarkable values. Spawning habitat would be improved in both river corridors. Recommend supplementation of resident fish stocks with hatchery catchables and fingerlings on the Middle Deschutes River. Manage to enhance native fish communities on the Lower Crooked River. **Riparian:** Same as Alternative 1, except natural methods of bank stabilization such as planting native riparian vegetation and introduction of beavers would be encouraged. Introduction of non-native plant species would be allowed if determined that there would be no adverse impacts to other resources. Facilities could be developed in riparian areas if determined necessary to mitigate impacts from recreation use. Livestock grazing would be the same as Alternative 1.

Alternative 3	Alternative 4	Preferred Alternative
Water Quantity and Quality: Refer to the Aquatic and Riparian Resources section of the Management Actions Common to All Alternatives. **Fisheries:** Same as in Alternative 2, except manage both rivers to enhance native fish communities. Recommend that introduction of non-native or hatchery fish not be allowed.	**Water Quantity and Quality:** Refer to the Aquatic and Riparian Resources section of the Management Actions Common to All Alternatives. **Fisheries:** Manage for historic fish communities (pre-dam) while protecting all outstandingly remarkable values.	**Water Quantity and Quality:** Refer to the Aquatic and Riparian Resources section of the Management Actions Common to All Alternatives. **Fisheries:** Cooperate with ODF&W in fish management while focusing on resident fish habitat protection projects and long-term basin planning. Recommend that no new fish habitat structures or modifications be allowed within the high water channel unless they enhance river related resources and free-flow standards. Encourage ODF&W to provide fish passage in artificial barrier areas where passage has been determined to be suitable to protect and enhance outstandingly remarkable values. Spawning habitat would be improved in both river corridors. Manage both rivers to enhance native fish communities. Recommend that introduction of non-native or hatchery fish not be allowed.
Riparian: Same as in Alternative 2, except natural methods of bank stabilization would be required in most circumstances. Mechanical means of vegetation management would be required in most circumstances (ie. hand grubbing of noxious weeds). Plant only native riparian vegetation species as needed to maintain the riparian zone in a proper functioning condition. Except for developed trails, facilities would not be developed in riparian areas. Livestock grazing would be excluded within riparian areas on public lands, except when no other vegetation management strategy is appropriate to allow the riparian area to remain in its proper functioning condition. New livestock fencing would be constructed in as described in Alternative 3 under Issue 5. No livestock grazing would be allowed in riparian areas along the Middle Deschutes and Lower Crooked Rivers on National Grasslands.	**Riparian:** Same as in Alternative 3, except trails and other facilities would not be developed in riparian areas.	**Riparian:** Natural bank stabilization methods such as planting native riparian vegetation would be required in most circumstances. Introduction of non-native plant species would be allowed if determined that there would be no adverse impacts to other resources. Mechanical means of vegetation management would be required in most circumstances (ie. hand grubbing of noxious weeds). Except for developed trails, facilities would not be developed in riparian areas. Livestock grazing would be excluded within riparian areas on BLM public lands, except when no other vegetation strategy is appropriate to allow the riparian area to remain in its proper functioning condition. New livestock fencing would be constructed as described in Alternative 5 under Issue 5. No livestock grazing would be allowed in riparian areas along the Middle Deschutes and Lower Crooked Rivers on National Grasslands.

Issue 5	Alternative 1 (No Action)	Alternative 2
How should upland vegetation and wildlife habitat be managed within the corridors?	**Biological Diversity:** Continue to utilize a combination of grazing, juniper thinning, vegetation manipulation, fire management strategies, and other vegetation and wildlife habitat enhancement tools to manage the upland environment. Naturally appearing enhancement projects would be emphasized. State laws governing use of chemicals to resolve noxious weed problems would remain in effect. ODF&W, BLM, and National Grasslands would continue monitoring and conducting inventories on lands under their jurisdiction to identify and protect plant and wildlife habitat. Develop recovery plans, as needed, for threatened, endangered, or sensitive plant and animal species.	**Biological Diversity:** Same as Alternative 1, except encourage enhancement projects such as installation of nest boxes and roosting platforms for birds. Upland water sources would be developed for better wildlife distribution. Federal and State agencies in cooperation with the University of Oregon, private landowners, and other interested groups would conduct comprehensive inventories and develop a strategy for ongoing protection of federal and state listed threatened, endangered, and sensitive plant and animal species. Introduction of non-native plant and animal species could occur if determined that there would be no adverse impacts to outstandingly remarkable values. Native species would be emphasized.
	Livestock Grazing: Livestock forage allocation increases could occur on public lands within the river corridor upon the plateaus, upland canyon areas, and riparian areas on BLM and the plateaus on National Grasslands based on improving vegetative condition. Livestock grazing would be excluded on National Grasslands between upland canyon areas and riparian areas. Livestock grazing strategies would encourage an upward trend in ecological condition. Livestock grazing management on private lands would be dependent upon individual livestock operators. The managing agencies would coordinate with Gray Butte Grazing Association and local landowners to instill a holistic resource management concept on both private and public lands to enhance wildlife and other resource values within the river corridors.	**Livestock Grazing:** Same as Alternative 1, except existing upland water sources would be developed upon the plateaus for better livestock and wildlife distribution and forage utilization.

Alternative 3	Alternative 4	Preferred Alternative
Biological Diversity: Same as Alternative 2, except planting of native species would occur to enhance natural plant succession. Vegetation manipulation strategies would occur through fire and mechanical means. Other vegetation manipulation strategies, excluding chemical management, could be used if determined no other strategy was appropriate and did not adversely affect outstandingly remarkable values. Federal and State agencies in cooperation with the University of Oregon, private landowners, and other interested groups would conduct comprehensive inventories and develop a strategy for protection of federal and state listed threatened, endangered, sensitive plant and animal species, and ecological communities such as canyon ecosystems and riparian habitat which are important to maintaining existing biological diversity. Introduction of non-native plant and animal species could occur if determined that there would be no adverse impact to any resource value.	**Biological Diversity:** Same as Alternative 3, except vegetation manipulation strategies other than fire and mechanical means would not be allowed within the canyon areas. All enhancement projects would be required to be naturally appearing. Reintroduction of native wildlife species could occur. Introduction of non-native plant and animal species would not occur. Cooperative agreements for wildlife habitat improvements would be pursued with private landowners.	**Biological Diversity:** Utilize a combination of grazing (on the plateaus), juniper thinning, vegetation manipulation, fire management strategies, and other vegetation and wildlife habitat enhancement tools to manage the upland environment. Naturally appearing enhancement projects would be emphasized. Encourage enhancement projects such as installation of roosting platforms for birds where appropriate. Upland water sources would be developed for better wildlife distribution. Allow chemical management within the corridors' upland areas only when no other vegetation management tools are appropriate. Federal and State agencies in cooperation with the University of Oregon, private landowners, and other interested groups would conduct comprehensive inventories and develop a strategy for protection of federal and state listed threatened, endangered, sensitive plant and animal species, and ecological communities such as canyon ecosystems and riparian habitat which are important to maintaining existing biological diversity. Native species would be emphasized. Introduction of non-native plant and animal species could occur if determined that there would be no adverse affect to any resource value. Cooperative agreements for wildlife habitat improvements would be pursued with private landowners.
Livestock Grazing: Livestock grazing on all public lands within the upland canyon and riparian areas would be excluded except for extreme circumstances warranting short-term spot grazing. Livestock grazing on public lands along the plateaus beyond the canyon rims would be managed to achieve an upward trend in ecological condition. Gap fencing on public lands would be constructed along the rims in active grazing allotments where natural features don't exist to exclude livestock from accessing public lands between the rims. This would primarily take place on the Cooper allotment (BLM-7514) adjacent to private land boundaries near the river. Existing upland water sources would be developed upon the plateaus for better livestock and wildlife distribution and forage utilization.	**Livestock Grazing:** Exclude livestock grazing on all public lands within both corridors. Short-term spot grazing could occur upon the plateaus under extreme circumstances if determined no other vegetation manipulation tool was appropriate. Spot grazing would not be allowed in upland canyon or riparian areas.	**Livestock Grazing:** Livestock grazing on all public lands within the upland canyon and riparian areas would be excluded except for extreme circumstances warranting short-term spot grazing. Livestock grazing on public lands along the plateaus beyond the canyon rims would be managed to achieve an upward trend in ecological condition. Gap fencing on public lands would be constructed along the rims in active grazing allotments where natural features don't exist to exclude livestock from accessing public lands between the rims. This would primarily take place on the Cooper allotment (BLM-7514) adjacent to private land boundaries near the river. Existing upland water sources would be developed upon the plateaus for better livestock and wildlife distribution and forage utilization.

Issue 6	Alternative 1 (No Action)	Alternative 2
How should Commercial Resource Uses be managed?	**Utility and Transportation Corridors:** No additional river crossing sites on BLM managed portions of the Middle Deschutes River would be permitted. All rights-of-way applications would be reviewed using the criteria of following existing corridors when practical and avoiding a proliferation of separate rights-of-way. Designated Areas of Critical Environmental Concern and Wilderness Study Areas would not be available for rights-of-way and utility transportation uses. Areas having high or sensitive scenic qualities would be avoided or appropriate mitigation measures would be taken. All utility and transportation development on National Grasslands would be in existing corridors. Exclusion and avoidance areas are identified in the Grasslands Plan. Development would be done in a manner that minimizes adverse environmental impacts while allowing logical and efficient development of energy transmission and transportation systems. Rights-of-way on National Grasslands could be granted in riparian and deer winter range areas within the river corridors where no alternative routes exist. One existing utility corridor crosses the Crooked River within the wild and scenic river boundary on the National Grasslands. **Leasable:** Leasable minerals such as oil, gas and geothermal would remain open for leasing on BLM lands. Surface occupancy is not allowed in visually sensitive areas within the Middle Deschutes and Lower Crooked River corridors unless activities can be mitigated. Evidence of surface occupancy, exploration, or similar activities should not be visible from these rivers. Evidence of reclamation upon activity completion would be required to be substantially unnoticeable. All activities would use existing roads to the fullest extent possible. On National Grasslands, use, occupancy or surface disturbance would not be allowed within the river corridors.	**Utility and Transmission Corridors:** Same as Alternative 1, except new rights-of-way and utility corridor applications may be approved if they are not seen from the Middle Deschutes and/or Lower Crooked Rivers. **Leasable:** Same as Alternative 1.

Alternative 3	Alternative 4	Preferred Alternative
Utility and Transmission Corridors: Same as Alternative 2.	**Utility and Transmission Corridors:** No new rights of way or utility corridors would be allowed on public lands within the Middle Deschutes and Lower Crooked River corridor boundaries. All future applications to use existing utility corridors crossing the Crooked River inside of the wild and scenic river boundary on the National Grasslands would be relocated outside of the planning area.	**Utility and Transportation Corridors:** No additional river crossing sites on BLM and National Grasslands within the Middle Deschutes and Lower Crooked Wild and Scenic River boundaries would be permitted. Replacement or upgrade of existing facilities would be allowed if a qualitative assessment shows no adverse impact to outstandingly remarkable values. Replacement of existing facilities would be allowed at the current level of development within existing utility corridors. All rights-of-way applications would be reviewed on a case-by-case basis and allowed only if the outstandingly remarkable values were not significantly affected. Areas within existing corridors having high or sensitive scenic qualities would be avoided or appropriate mitigation measures would be taken.
Leasable: Same as Alternative 1.	**Leasable:** The BLM would pursue a mineral leasing withdrawal on all public lands within the Middle Deschutes and Lower Crooked River boundaries. On National Grasslands, use, occupancy or surface disturbance would not be allowed within the river corridors.	**Leasable:** Leasable minerals such as oil, gas and geothermal would remain open for leasing on BLM lands. Surface occupancy is not allowed in visually sensitive areas within the Middle Deschutes and Lower Crooked River corridors unless activities can be mitigated. Evidence of surface occupancy, exploration, or similar activities should not be visible from these rivers. Evidence of reclamation upon activity completion would be required to be substantially unnoticeable. All activities would use existing roads to the fullest extent possible. On National Grasslands, use, occupancy or surface disturbance would not be allowed within the river corridors.

Issue 6	Alternative 1 (No Action)	Alternative 2
How should Commercial Resource Uses be managed? (cont)	**Saleable Minerals:** Saleable minerals on BLM public lands would continue to be made available for sale to the public and under free use permits to state and local governments. New mineral material sites may be developed as needed if their development is consistent with the long-term protection and management of other resource values. Activities on BLM managed lands may be visible from the rivers but should not attract attention, leave long term visual impacts, or be located on steep slopes. The evidence of reclamation would also be substantially unnoticeable after reclamation has been completed. All activities would use existing roads to the fullest extent possible. Common (saleable) mineral material sources would not be inventoried or developed within those areas designated as wild and scenic rivers on National Grasslands. **Locatable Minerals:** Areas not specifically withdrawn from mineral entry on BLM public lands would continue to be open under the mining laws to help meet the demand for minerals. Mineral exploration and development on public land would be regulated to prevent unnecessary and undue degradation. A plan of operation would be required prior to commencing locatable mineral use operations in areas designated for potential addition to, or an actual component of the National Wild and Scenic Rivers System. The 1872 mining law does not apply to National Grassland acquired lands managed by the USFS. Traditionally, locatable minerals are only available by leasing on these lands. Prospecting permits and leases would be allowed within the wild and scenic boundary if located a 1/4 - mile away from the Middle Deschutes and Lower Crooked Rivers.	**Saleable Minerals:** New saleable mineral material sites would not be authorized on public lands within the Middle Deschutes and Lower Crooked Wild and Scenic River boundary areas. Private surface and sub-surface right acquisition or scenic easements would be pursued with willing mineral right holders to minimize potential impacts to scenic quality. Existing saleable mineral leases would be managed as described in Alternative 1. **Locatable Minerals:** Same as Alternative 1.

Alternative 3	Alternative 4	Preferred Alternative
Saleable Minerals: Same as Alternative 2.	**Saleable Minerals:** The BLM would not sell saleable minerals on public lands within the Middle Deschutes and Lower Crooked River boundaries. Existing mineral lease holders would be required to fully rehabilitate activity areas utilizing recontouring and native vegetation after activity completion. On National Grasslands, saleable minerals would be managed as described in Alternative 1.	**Saleable Minerals:** New saleable mineral material sites would not be authorized on public lands within the Middle Deschutes and Lower Crooked Wild and Scenic River boundary areas. Private surface and sub-surface right acquisition or scenic easements would be pursued with willing mineral right holders to minimize potential impacts to scenic quality. Existing saleable mineral leases would be managed as described in Alternative 1.
Locatable Minerals: The BLM would pursue a mineral entry withdrawal for all BLM lands seen from the Middle Deschutes and Lower Crooked Rivers within the planning corridor. BLM lands not seen from the Middle Deschutes and Lower Crooked Rivers would remain open to mineral entry. Mineral exploration and development on these public lands would be regulated to prevent unnecessary and undue degradation. For the National Grasslands, management would be the same as described in Alternative 1.	**Locatable Minerals:** Same as Alternative 3, except the BLM would pursue a mineral withdrawal of all public lands within the Middle Deschutes and Lower Crooked River boundaries.	**Locatable Minerals:** Areas not specifically withdrawn from mineral entry on BLM public lands would continue to be open under the mining laws to help meet the demand for minerals. Mineral exploration and development on public land would be regulated to prevent unnecessary and undue degradation. A plan of operation would be required prior to commencing locatable mineral use operations in areas designated for potential addition to, or an actual component of the National Wild and Scenic Rivers System. On National Grasslands, mineral management would be the same as described in Alternative 1.

Issue 7	Alternative 1 (No Action)	Alternative 2
Where should the final Middle Deschutes/Lower Crooked Wild and Scenic River boundaries be located?	The existing wild and scenic river preliminary boundaries (average of no more than 320 acres per river mile within each designated segment) apply as shown on the Existing Situation Map in Appendix F. The objective of the irregular boundary is to include as many of the areas as possible that contain or directly support the rivers identified outstandingly remarkable values. The State Scenic Waterway on the Middle Deschutes would remain unchanged as a uniform 1/4 mile boundary on either side of the river in Segments 3 and 4 as shown in Chapter 6.	Same as Alternative 1.

Alternative 3	Alternative 4	Preferred Alternative
Same as Alternative 1, except establish the Federal Wild and Scenic River boundaries to protect the view from the rivers, generally between the highest rims as shown on Alternative 3 Map in Appendix F. Those areas where the rims are not definable, use Visual Resource Management Scenic Quality A, High Visual Sensitivity, and Management Classes I-III to maximize scenic values. Boundaries would be established within acreage constraints imposed by the Wild and Scenic Rivers Act (average of no more than 320 acres per river mile within each designated segment).	Same as Alternative 3.	Utilize a combination of the preliminary boundaries and boundaries defined under Alternative 3 to protect and enhance outstandingly remarkable values within the corridors as shown on Alternative 5 Map in Appendix F. Boundaries would be established within acreage constraints imposed by the Wild and Scenic Rivers Act (average of no more than 320 acres per river mile within each designated segment). The State Scenic Waterway on the Middle Deschutes would remain unchanged as a uniform 1/4 mile boundary on either side of the river in Segments 3 and 4 as shown in Chapter 6.

F. Management Actions Common to All Alternatives

Some management actions have already been taken, or are in the process of being implemented by one or more of the managing agencies as a result of previous planning decisions or interagency agreements. These are generally found in the Brothers/LaPine Resource Management Plan, Crooked River National Grassland Land and Resource Management Plan, and Oregon State Scenic Waterway Management Plan which can be obtained at any of the local agency offices. Other actions believed to lack public controversy or which do not significantly impact the environment are described as "Management Actions Common to All Alternatives." They are considered decisions that would be carried forward under all alternatives. They include the following:

Recreation Opportunities

Segment 4 of the Middle Deschutes River is located entirely in the Deschutes Canyon/ Steelhead Falls Wilderness Study Area (WSA). This area was jointly studied by the BLM and USFS (National Grasslands) to inventory wilderness values and determine wilderness suitability. The study determined that the area should be managed for uses other than wilderness. This area would be managed to protect existing natural values until Congress makes the final determination regarding wilderness suitability. If Congress designates this area as wilderness, a wilderness management plan would be developed and only those management actions in this plan that are consistent with wilderness management policy would occur. If Congress does not designate this area as wilderness, then the management actions, visitor use activities, and trail/facility/access proposals identified in the preferred alternative would occur.

Recreation projects and facility development would be analyzed to ensure protection of outstandingly remarkable values and private lands.

Managing agencies would conduct visitor use, angler preference, and statistical creel surveys to analyze user need and necessary changes in fishing regulations. Hunting and trapping regulations would continue to be evaluated by the ODF&W for appropriate regulations.

Low impact animals such as llamas would be allowed in human use areas unless it was determined that the activity created adverse impacts to outstandingly remarkable values.

Identify high impact recreation opportunities and create special use areas and/or restrictions for them. Recreation opportunities would be limited to specific geographic areas or excluded if resource monitoring determined that recreation use had a significant, adverse impact on outstandingly remarkable values.

The managing agencies would develop a cooperative system for gathering and analyzing camping and day use data to maintain accurate monitoring information to ensure that management objectives are met.

All new development would consider barrier free access. Special use facilities for any disability would be installed as determined necessary.

Operations and maintenance of campground facilities would continue at whatever level necessary to meet federal standards consistent with level of use, development, and maintenance standards.

Limits of Acceptable Change criteria would be utilized to evaluate necessary management actions for overnight campsites and day use areas. Degraded campsites and day use areas

needing rehabilitation would be closed until sufficient recovery has occurred. Once rehabilitation is complete, camping or day use may be allowed if the sites are capable of sustaining use and that use is consistent with management objectives.

Public and Administrative Access

Public access over private lands may occur through easement, acquisition, or cooperative agreement with willing landowners.

Public access may be limited to existing roads and trails or restricted or closed in specific locations if resource monitoring determined that significant impacts to outstandingly remarkable values occurred and stabilization efforts are ineffective. Rehabilitation efforts would occur on access routes that are closed to public access. Inventoried public access routes experiencing major degradation would be stabilized.

The Steelhead Falls Wilderness Study Area limits vehicle access to existing vehicle routes. If the area is designated as Wilderness, motorized access would be limited to adjacent roads outside its boundary. Parking and trailhead areas would be developed outside of the Wilderness area in high use access points.

All physically accessible areas on federal lands within the corridors would be open for administrative access.

Access to whitewater floating would remain primitive and undefined.

Brochures, signs and interpretive materials would contain information on access roads, trails, parking, camping, and resource protection strategies.

Adjacent Private Lands

Private land use and zoning regulations would be developed and managed by county and state managing agencies. Activities on private lands that influence scenic quality would continue to be regulated by county and State Scenic Waterway regulations. Some of these include building setbacks from the canyon rim and restrictions on building in wetland and riparian areas. Special land use permits would be evaluated on a case-by-case basis to ensure protection of outstandingly remarkable values. BLM and the National Grasslands would continue to work cooperatively with private landowners and local, county, and state agencies also responsible for protecting the scenic quality of both river corridors.

Scenic easements, acquisition, and land exchanges could occur to enhance management and protection of outstandingly remarkable values if consistent with this management plan and agreeable with private landowners. The managing agencies would coordinate with county and state agencies to provide landowner incentives to protect and enhance scenic quality on private land. A periodic river clean-up effort would also be coordinated between local, state and federal agencies, and adjacent landowners to maintain the existing scenic quality of these river canyons and promote minimum impact use of these environments.

A landowner incentive booklet would be developed by the cooperating management agencies to encourage appropriate use of river related resources.

A public/private landowner stewardship group would be formed along with public land user representatives to help implement this river management plan and monitor the effectiveness of management actions to protect and

enhance the resource values and resolve conflicts associated with public and private uses of these river canyon areas.

Except for small isolated blocks of public lands surrounded by privately owned land, BLM and the National Grasslands would retain lands in public ownership. The managing agencies could acquire private inholdings within the corridors that help protect river related resources.

The managing agencies would contact private landowners for permission prior to accessing private lands.

Public land access would be managed to discourage unauthorized access to private lands.

Aquatic and Riparian Resources

The Middle Deschutes and Lower Crooked Wild and Scenic Rivers would be preserved in their existing free-flowing condition without impoundment, diversion, straightening, riprapping, or other modifications of the river that adversely affect the outstandingly remarkable values for which they were designated. Water diversions or impoundments upstream that may adversely impact existing free-flowing conditions would require an analysis utilizing requirements as defined in Section 7 of the Wild and Scenic Rivers Act 1969 (as amended) before project implementation.

An instream flow study would be conducted to biologically determine appropriate flows that restore and/or protect outstandingly remarkable values within the river segments. The managing agencies would recommend appropriate minimum instream flows necessary for protecting outstandingly remarkable values within the Middle Deschutes and Lower Crooked River corridors after analyzing State review of water appropriations, the Deschutes Basin Investigation Report, Instream Flow study results, and other appropriate flow information.

The managing agencies would monitor and participate in issues which have the capacity to impact optimum flows associated with the outstandingly remarkable values by playing and advocacy role and if necessary, actively seek opportunities to accept transfer, receive donations or purchase existing water rights.

The managing agencies would conduct a cooperative water resource analysis to determine available water quantities and future needs for domestic, agricultural, and commercial water users.

The managing agencies in cooperation with ODF&W and other interested groups would develop a consistent and well coordinated inventory, management plan implementation, funding and monitoring program for instream and riparian resources along the river corridors to ensure that management objectives are met.

The managing agencies would actively manage the river corridor to maintain non-impairment of water quality. Water quality would continue to be monitored and the non-degradation policy would continue to be enforced by the State Department of Environmental Quality (DEQ). Federal agencies would assist in water quality monitoring and coordinate with DEQ to share water quality data, upgrading water quality, and water quality monitoring techniques to ensure that water quality standards meet or exceed water quality standards.

The managing agencies would actively maintain riparian vegetation communities in proper functioning ecological condition while allowing only those projects that promote biological diversity. Desirable vegetative communities include: alder, red-osier dogwood, willows, and a variety of understory species such as chokecherry, rush, and various grasses. The

specific composition and presence of each community would be dictated by specific site characteristics. Riparian vegetation would also be managed to provide cover for upland game birds and other animals dependent upon the riparian area. Riparian projects would be analyzed on a project by project basis to rehabilitate severe riverbank erosion.

Use of chemicals in riparian areas for noxious weed control would be prohibited.

Fishery enhancement projects would be encouraged. Removal of woody debris would not be allowed.

Federal and State agencies would conduct detailed inventories for protection of federal and state listed threatened, endangered and/or sensitive plant/animal species. Continue monitoring habitats for federal threatened and endangered and state sensitive listed plant and animal species.

Upland Resources

The managing agencies would maintain vegetative diversity while focusing on ecological conditions between mid and late seral status and allowing only those projects that promote biological diversity. Early seral conditions would be provided as necessary to provide habitat for animal species dependent upon this ecological status. Desirable vegetative communities include: western juniper, sagebrush, bitterbrush, rabbitbrush, bunchgrasses, Sandberg bluegrass, mock orange, Douglas' spiraea, balsamroot, snowberry, penstemon, isolated areas of Estes' wormwood, and a variety of other species. The specific composition and presence of each community would be dictated by specific site characteristics. Deer winter range and other big game areas within the river corridors would be managed to attain a 40/60 cover/forage ratio. The maximum distance from cover to any point in forage area would not exceed 1,200 feet. Thermal cover units would be 5 acres each and evenly distributed on BLM managed public lands and 20 acres and larger on National Grasslands.

Prescribed burning and conditional fire suppression could be used to allow the upland slopes to return to a natural fire-dependent watershed ecosystem. Fires which would not threaten or damage private property or other primary values of the corridor would be allowed to burn. Wildfire suppression would occur at whatever level necessary to protect public facilities with minimum mechanical disturbance.

Coordination would occur with appropriate agencies and private individuals to ensure the watershed remains in proper functioning condition.

The managing agencies in cooperation with ODF&W, U.S. Fish and Wildlife Service and other interested groups would conduct inventories for protection of federal and state listed threatened, endangered, and sensitive plant and animal species. Continue monitoring habitats for federal, state listed T & E plant and animal species. Facilitate for species richness and diversity.

The managing agencies would protect raptor habitat from human disturbance as defined in the Code of Federal regulations and as discussed in the managing agencies resource managment plans.
Most scenery values remain protected by steep terrain and limited public access. Activities within areas on public lands having high or sensitive visual quality may be permitted if they would not attract attention or leave long-term adverse visual changes on public land. Any new projects within the corridor would require interdisciplinary analysis to ensure that scenery values are not adversely impacted. Adjacent landowners would be encouraged to

One of many isolated upland benches that are in excellent ecological condition

consider scenic values in their land use and property management activities.

Cultural Resources

The managing agencies would manage archaeological/historical and traditional use resources within the Middle Deschutes and Lower Crooked River corridors through a coordinated plan of goals and objectives common to the BLM, U.S Forest Service, and Oregon State Parks and Recreation Department. Private landowners would be encouraged to participate in this process.

The National Grasslands would selectively enhance and interpret cultural resources, with priority on identifying sites that will compliment management emphasis of specific National Grassland areas.

The managing agencies would each maintain a cultural resources database atlas for lands under their jurisdiction. The Tribes would contribute information on significant traditional use sites and materials.

The managing agencies would conduct an appropriate level of inventory, over lands under their jurisdiction, to identify prehistoric and historic sites or features in areas proposed for surface-disturbing projects. Sites discovered would be evaluated for significance following National Register of Historic Places criteria, in consultation with the State Historic Preservation Office. The managing agencies would

consider the effect of any proposed undertaking on sites which meet the National Register criteria by following regulations of the Advisory Council on Historic Preservation or a memoranda of agreement negotiated with the Council.

Projects with ground-disturbing activities in National Register eligible sites would be relocated. Project cancellation or mitigating measures would take place in areas where relocating a planned project is not feasible. Mitigation would usually be an attempt to extract and preserve those attributes of a site which qualify it for the National Register.

The managing agencies would consult with, and invite the participation of, the Tribes in the early planning stages of proposed surface disturbing activities.

The managing agencies would protect and/or stabilize cultural resource sites from human-caused or natural sources of erosion or deterioration were possible.

The managing agencies would increase emphasis on enforcement of established laws, regulations, and policies related to the protection and preservation of cultural resource values. A monitoring plan would be developed and implemented to document changes (natural and human-caused) and ensure adequate protection.

The managing agencies would develop and implement a public information/education program aimed at increasing public awareness of and appreciation for the significance of cultural resources.

Information and Education

The managing agencies would become actively involved in seeking volunteers to assist in public information and education programs, encourage stewardship, and to provide annual care for the corridors. The managing agencies would also coordinate efforts with private landowners, and local and regional conservation groups to conduct year-round protection of river related resources.

Camping and day use regulations and administrative actions would be posted and changed as needed to meet management objectives.

The managing agencies would develop a strategy to incorporate "Tread Lightly", "Pack It In - Pack It Out", "No Trace Camping", and "No Trespassing" ethics into the public information and education program. Small interpretive signs emphasizing minimum impact of public lands would be installed in key access areas within both river corridors.

The managing agencies would emphasize the development of a coordinated public information and education program which utilizes interpretive signs, brochures, maps and other material to gain public understanding of river resources, management goals and objectives, and respect private landowners rights.

The managing agencies would develop a coordinated sign plan for the river corridors. Signs installed at camping areas, day use areas, trailheads, and other appropriate use areas would be of the same sign design standards where feasible. Facilities and major use areas would be clearly signed to encourage appropriate use.

Law Enforcement and Emergency Services

Law enforcement efforts would continue with better communications between agencies. Annual meetings would be conducted to facilitate better coordination. A uniform communication network would be implemented.

Public education and enforcement patrols would be conducted, as defined by the coordination team with private landowner and recreation staff involvement. Public land safety regulations would be developed along with active signing within high use areas. BLM, National Grasslands and local fire districts would continue coordination efforts through the Central Oregon Cooperative Fire Management Plan and be jointly involved in fire suppression and fire prevention responsibilities.

The BLM and National Grasslands would continue fire suppression responsibilities on public lands within the corridors. Wildfire suppression would occur at whatever level necessary to protect public values and adjacent private property with minimal mechanical disturbance.

Public land safety regulations would be developed along with an active signing campaign within high use areas.

The managing agencies would improve response to potential natural and human-caused emergencies by providing "Radio Help" during high visitor use periods when feasible.

The managing agencies would develop a coordinated public information and education program which explains fire regulations, individual liability, and fire hazard within the river corridor.

Utility and Transportation Corridors

Those applying for right-of-way permits for utility and transportation corridors would be encouraged to locate new facilities adjacent to existing facilities. All rights-of-way applications to the managing agencies would be reviewed using the criteria of following existing corridors wherever practical and avoiding proliferation of separate rights-of-way. Recommendations made to applicants and actions approved would be consistent with the Brothers/LaPine Resource Management Plan, Crooked River National Grassland Management Plan, and Wild and Scenic River standards.

Mineral Resources

The BLM and National Grasslands reserve rights to sub-surface minerals throughout the river corridors.

Mineral exploration and development on public lands within the river corridors would be regulated to prevent unnecessary and undue degradation to outstandingly remarkable values.

The managing agencies would grant no special uses that would have a direct and adverse effect upon river related values within the Middle Deschutes and Lower Crooked River corridors.

State Scenic Waterway

The State Scenic Waterway boundary on the Middle Deschutes River would remain unchanged as a uniform 1\4 mile boundary on either side of the river in Segments 3 and 4. Public land managers and private landowners within the corridor boundary are responsible for complying to the State Scenic Waterway Program regulations and guidelines as discussed in Chapter 6.

III. Affected Environment

This chapter describes the existing physical, biological, social, and economic environment that may be affected by management activities proposed in the wild and scenic river corridors. The outstandingly remarkable and significant river values for which the river was added to the national system are also described (see Table 4 - Outstandingly Remarkable Value Comparison Chart). This information forms the baseline for measuring changes and comparing alternatives. Additional river value information is contained the Middle Deschutes/Lower Crooked River Resource Assessment. This document is available upon request at the Bureau of Land Management and Ochoco National Forest, Prineville offices.

River Description

The Federally designated 20 mile portion of the Middle Deschutes River and 9.3 mile portion of the Lower Crooked River are described in the following river segment narratives. River descriptions for Segments 1 and 2 can be found in Chapter 6, State Scenic Waterways Program.

Segment 3 - The 9 mile segment from Odin Falls to the Wilderness Study Area (WSA) boundary (Deschutes River mile 140 to 131).

This segment begins 4 1/2 miles downstream from Highway 126 and is approximately 6 miles from the regional population center of Redmond. This 9 mile segment of State Scenic Waterway is also designated as a "scenic" component of the National Wild and Scenic River System. Approximately 3.7 river miles are within lands administered by the Bureau of Land Management (BLM), and 5.3 river miles are within and adjacent to private subdivisions and agriculture lands.

The river flows through a 150 foot deep, very scenic, steep-walled basalt canyon. Excellent fishing opportunities exist for rainbow and brown trout, as well as, mountain whitefish. This river segment is accessible by vehicle in several locations, however, large tracts of private land limit public access. Lower Bridge Market Road, which crosses the Middle Deschutes at river mile 133.5, offers recreationists limited access for a short distance downriver along the west bank. No constructed or maintained trails exist in the area, however, a number of user developed trails are used by a variety of recreationists. This segment has numerous cultural/historical sites.

Vegetation varies greatly from the plateaus to the canyon bottoms. The vegetation on the plateaus consists primarily of juniper, sagebrush, bitterbrush, rabbitbrush, numerous grass species and a few scattered ponderosa pine. Riparian vegetation includes willow, alder, mock orange, juniper, spireas, sedges, wild rose, red-osier dogwood, penstemon and many other species.

Farm and Ranch lands, within and adjacent to the corridor, produce a variety of important crops and contribute to a stable economy. An active diatomaceous earth (Dicalite) mine and an abandoned strip mine are located west of the corridor where Lower Bridge Market Road crosses the river. In addition, an active gravel quarry is located adjacent to the corridor on the east side of the river in the same area.

Segment 4 - The 11 mile segment from the WSA boundary to the Upper End of Lake Billy Chinook (Deschutes River mile 131 to 120).

This segment is located directly adjacent to the community of Crooked River Ranch and is

approximately 10 to 15 miles from the regional population centers of Redmond and Madras, respectively. This 11 mile segment is a State Scenic Waterway as well as a "scenic" component of the National Wild and Scenic River System. Approximately 8 river miles are within lands administered by the BLM, and 1 river mile is within lands administered by the National Grasslands. Private subdivisions, agricultural lands, and other private lands total approximately 155 acres within the corridor.

The river flows through a deep rugged, highly scenic, steep-walled basalt canyon that increases in depth as it proceeds northward. Excellent fishing opportunities exist for rainbow, brown, bull trout and kokanee. Vehicle access is limited in the corridor due to its rugged character and private lands along the canyon rim. No constructed or maintained trails exist in the area, however, a number of user developed trails are used by a variety of recreationists. This segment has numerous cultural sites containing rock art, rock shelters, and shell middens.

Vegetation varies greatly from the plateaus to the canyon bottoms. The vegetation on the plateaus consists primarily of juniper, sagebrush, bitterbrush, rabbitbrush, numerous grass species and a few scattered ponderosa pine. Riparian vegetation includes willow, alder, mock orange, juniper, spireas, sedges, wild rose, red-osier dogwood, penstemon and many other species. Squaw Creek, a major tributary in the lower part of this segment, as well as significant ground water sources add to the water flow. A number of water withdrawals for private and agricultural uses exist within the corridor.

Table 4 - Outstandingly Remarkable Value Comparison Chart

Resource Value	Congressional	Segment 3	Segment 4	Lower Crooked
Scenic	ORV	S	ORV	OR
Recreation	ORV	ORV	ORV	ORV
Geology	ORV	S	ORV	ORV
Hydrology	ORV	S	ORV	ORV
Fishery	ORV	S	ORV	S
Wildlife	ORV	ORV	ORV	ORV
Cultural*	ORV	ORV	ORV	S
Botanical**	ORV	ORV	ORV	ORV
Wilderness	ORV	Not a Wild and Scenic Resource Value		

ORV - Outstandingly Remarkable Value
S - Significant Value
* Prehistoric/Historical/Traditional
** Botanical/Ecological

Table 5 - Middle Deschutes/Lower Crooked River Acreages by Ownership					
Segment	**BLM**	**USFS**	**ODFW**	**Private**	**Total**
Segment 3	670	0	0	890	1,560
Segment 4	2,340	2,055	40	155	4,590
Lower Crooked	520	790	170	1,140	2,620
Total	**3,530**	**2,845**	**210**	**2,185**	**8,770**

A portion of this segment is located in the Deschutes Canyon/Steelhead Falls Wilderness Study Area (WSA). This area was jointly studied by the BLM and National Grasslands to inventory wilderness values and determine wilderness suitability. Both agencies recommended to Congress that the area be managed for uses other than Wilderness. The area is currently managed under WSA interim management guidelines to protect wilderness values until Congress makes its final determination.

Lower Crooked - The 9.8 mile segment from the National Grassland boundary to river mile 8, south of Opal Spring (river mile 8 to 17.8).

This segment is located directly adjacent to the community of Crooked River Ranch and is approximately 10 miles from the regional population centers of Redmond and Madras. This 9.8 mile segment is designated as a "recreation" component of the National Wild and Scenic River System. Unlike the Middle Deschutes River, this segment is not a State Scenic Waterway. Approximately 2.3 river miles are within lands administered by the Bureau of Land Management (BLM), and 2.4 river miles are within lands administered by the National Grasslands. Approximately, 5.1 river miles are within or adjacent to private subdivisions and agricultural lands.

The river flows through a rugged, highly scenic, steep-walled basalt canyon that increases in depth as it proceeds northward. There are numerous natural and geologic features such as springs, rock pillars and columns, eagle nests, waterfalls and rapids along the river. Excellent fishing opportunities exist for rainbow trout upriver from Opal Springs, within the corridor boundary, and for brown trout, bull trout and kokanee downriver from Opal Springs, outside the corridor boundary. In addition, a limited number of small and largemouth bass inhabit the river. Vehicle access is limited in the corridor due to its rugged character and private lands along the canyon rim. A number of user developed trails exist directly adjacent to the Crooked River Ranch Clubhouse area. However, no agency constructed trails exist in the area.

Vegetation varies greatly from the plateaus to the canyon bottoms. The vegetation on the plateaus consists primarily of juniper, sagebrush, bitterbrush, rabbitbrush, numerous grass species and a few scattered ponderosa pine. Riparian vegetation includes willow, alder, mock orange, juniper, spireas, sedges, wild rose, red-osier dogwood, penstemon and many other species. Several springs in the lower part of this segment contribute significantly to constant water flow, water temperature, and water quality. River flows entering this river

[3] *Land ownership figures were calculated using the preliminary wild and scenic river boundaries.*

segment are extremely limited due to water withdrawals for private and agricultural uses.

Land Ownership

General land managing partners within the Middle Deschutes and Lower Crooked River corridors include: BLM, National Grasslands, ODFW, and various private landowners. Table 5 provides a breakdown of land ownership acreages.[3]

Scenic Values

Scenic quality is an outstandingly remarkable value in both the Middle Deschutes and Lower Crooked River corridors. A Visual Resource Management (VRM) study of river segments 3, 4, and the Lower Crooked segment was conducted by the BLM between June and September of 1991. The purpose of this study was to determine the overall scenic quality of the river segments and provide baseline information for monitoring scenic quality in the future. The VRM study determined that the majority of the Middle Deschutes river corridor and the entire Lower Crooked River segment has outstanding scenic qualities, confirming the Congressional Record. The scenic quality of the plateaus surrounding these two river canyons greatly depends on the diversity of landscape, scenic vistas, and screening of human modifications. See Appendix D for more detailed VRM information.

Scenic values of the Middle Deschutes and Lower Crooked River canyons are primarily within the foreground landscape as viewed

One of many scenic vistas within the river corridors

from the river, trails, roads and other viewpoints within these corridors. These areas contain a diversity of landforms and vegetation that capture the attention of the viewer, contributing to a positive visitor experience. Some of these attractions include: waterfalls and springs, lush green riparian vegetation, volcanic layers of multi-colored basalt towering hundreds of feet above the canyon floors, and a diversity of wildlife.

The Middle Deschutes and Lower Crooked Rivers are the focal point of scenery in these canyon areas. Their reflective nature and variety water motion meandering through narrow riparian areas add significantly to canyon scenery. On the Middle Deschutes; Odin, Big and Steelhead falls offer change in river character enhancing the scenic quality of the corridor.

A narrow band of riparian vegetation enhances the scenic quality of the Middle Deschutes and Lower Crooked River corridors by adding a variety of lush green colors that contrast with the adjacent rivers and upland desert vegetation communities. The vegetative color in these areas is enhanced during the spring and fall months of the year as new spring growth eventually changes to different mosaics of red and yellow colors. Within segment 4 and the Lower Crooked River, there are several springs which enhance scenic quality by providing a diversity of riparian vegetation and additional opportunities for observing wildlife.

Within segment 3, homes on private lands along canyon rims reduce the natural scenic quality but are partially screened by the surrounding landscape. Several manmade features within these segments are not screened. Some of these include: Lower Bridge Market Road, and an active diatomaceous earth (Dicalite) mine and gravel pit operation in the Lower Bridge Market Road area.

Scenic views within the canyon areas in segment 4 and the Lower Crooked River segment are generally excellent, due to a variety of colorful rock formations, depth of both river canyons and their meandering nature. Homes and utility right-of-ways are present along canyon rims but generally do not detract from the natural scenic quality of the area. An intracanyon basalt flow is a unique geologic feature that can be easily seen from within both river canyons.

Livestock grazing on the plateaus above these two river canyons is adequately managed and does not adversely affect visual quality of these areas. However, livestock grazing has occurred in one portion of the Middle Deschutes River riparian area resulting in degradation to shorelines which detracts from the scenic quality on both public and private land.

Recreation/Access

Recreation Opportunities

Recreation is an outstandingly remarkable value in both river corridors. A diversity of year round roaded natural, semi-primitive motorized, and semi-primitive non-motorized recreation opportunities are available throughout the river corridors (refer to Text Box 1). These include but are not limited to fishing, hiking, camping, wildlife and nature observation, expert kayaking and rafting, picnicking, swimming, sunbathing, hunting, and photography.

A single point visitor use study was conducted by BLM in 1991 on public lands in the Steelhead Falls area to determine recreation opportunities and their value level in the deeper canyon areas of segments 3, 4 and the Lower Crooked River segment. Visitors that frequent the area originate from a diversity of locations. It has been determined that 30% of the visitors originate from the densely populated areas of the Willamette Valley and Portland Metropolitan

areas, 12% from Crooked River Ranch, 48% from other Central Oregon communities, 3% from other rural communities in Oregon, 3% from other states, and 3% from other countries. Of those surveyed 79% visited the area to fish, 73% enjoyed sightseeing, 58% engaged in wildlife observation, 33% in camping, 27% in picnicking, and 3% in rafting and photography. The primary motivation for visiting recreationists was to feel isolated. Refer to Appendix E for more detailed visitor use information.

Some portions of the Middle Deschutes and Lower Crooked are runable by expert kayakers during high water flows. Visitors have been known to kayak on the Crooked River from New York Rapids (where the North Irrigation Canal Unit Flume crosses the gorge) to Opal Springs. This river segment is extremely rocky and very difficult (Class IV - V). Perhaps even more difficult ratings are appropriate. The Middle Deschutes and Lower Crooked Rivers attract regional and national use by individuals

Text Box 1 - Recreation Opportunity Spectrum

The Bureau of Land Management and other agencies use the Recreation Opportunity Spectrum (ROS) framework to characterize outdoor recreation settings (places people go for recreation) based on such characteristics as access, naturalness, likelihood of encounters with other visitors, level and type of facilities and management regulations, and evidence of past recreational use. The ROS contains a range of opportunity classes: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban. The following are descriptions of the classes referred to in the text.

Semi-Primitive Non-Motorized - characterized by a predominantly natural or natural appearing environment of moderate-to-large size. Interaction between users is low, but there is often evidence of other users. Minimum on-site controls and restrictions are present, but subtle. Motorized use is not permitted. High probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility and self-reliance through the application of outdoor skills in and environment that offers challenge and risk.

Semi-Primitive Motorized - characterized by a predominately natural or natural-appearing environment of moderate-to-large size. Concentration of users is low, but there is often evidence of other users. Minimum on-site controls and restrictions may be present, but are subtle. Motorized use is permitted. Resource modifications may be evident but should harmonize with the environment, and rustic facilities and developments. Moderate probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility and self-reliance through the application of outdoor skills in an environment that offers challenge and risk.

Roaded Natural - characterized by predominately natural-appearing environment with moderate evidence of the sights and sounds of people. Such evidence usually harmonizes with the natural environment. Interaction between users many be low to moderate with evidence of other users prevalent. Resource modification utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities. There exists about equal probability to experience affiliation with other user groups and for isolation from sights and sound of humans. There also is an opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities associated with more primitive types of recreation are not very important. Practice and testing of outdoor skills might be important. Opportunities for both motorized and non-motorized forms of recreation are possible.

Applying the Recreation Opportunity Spectrum

The ROS provides a framework for stratifying and defining classes of outdoor recreation opportunity environments. However, not all recreation environments fit neatly into the defined opportunity classes. For example, the size of the Middle Deschutes and Lower Crooked River corridors coupled with the close proximity of homes on private land within view of the river are inconsistent with the definition of semi-primitive non-motorized opportunity class. In this particular environment, however, opportunities for recreation experiences correspond closely to those found in areas that match the semi-primitive non-motorized definition more closely, primarily as a result of prohibitive vehicle access. Due to the nature of the river corridors, we believe these terms are still appropriate, because the corresponding opportunities for certain types of recreation experiences are available.

with expert skills, providing a truly wild and challenging recreational experience during normal spring runoff periods. Other recreationists having advanced rafting skills have been known to raft portions of these rivers with several portages during the spring.

Outstanding game fishing opportunities exist at different times of the year on portions of the Middle Deschutes and Lower Crooked Rivers. An Oregon Department of Fish and Wildlife (ODF&W) wildlife data survey on portions of segments 3 and 4 indicated over 4,000 recreation visitor days of fishing occur annually. Although more popular for local residents, fishermen have been known to originate from as far away as Europe and Asia.

Except for a few central access points, recreation use is restricted due to private property and rugged character of both canyons. Although no comprehensive recreation visitor use study has been completed for these river segments major access points show signs of intense recreational use resulting in heavy environmental degradation.

Motorized Access

The Middle Deschutes River is accessible in few places by motorized vehicle. Lower Bridge Market Road crosses the river at river mile 133.5 and offers limited access on Kidder Road for a short distance downriver. On the west side of the river there are several motorized access points on dirt roads to the rim only. These include National Grassland roads 5540-020 (no public access), 6350-020, 6350-040 and 6350-060 which access Geneva Point overlook (not accessible between November 15 and March 15 due to deer range winter closure). On the east side of the river there are many dirt roads and jeep trails which provide motorized access to the canyon rim. These roads include unnumbered two-track roads throughout the Wilderness Study Area, three county maintained roads which access the Steelhead Falls trailhead and dispersed camping area, National Grassland road 62-0203 which access the Scout Camp area, and National Grassland roads 62-181, 62-160, 62-120, and 62-183 which access the upper northeast end of the river.

Opal Springs and Hollywood roads are private and provide the only motorized access that exists into the Lower Crooked River canyon. Although located outside of the corridor boundary, Opal Springs road is the only motorized road for river access where limited public use is allowed. Many dirt roads and jeep trails provide motorized access near the canyon rims. On the west side of the river, these access roads are county and private roads in the Crooked River Ranch subdivision. Several unnumbered BLM and National Grassland roads access the rim throughout the river corridor. National Grassland roads 61 and 6120 provide public access, while the other roads require private landowner permission to cross their property.

Non-Motorized Access

There are no agency-developed hiking, biking, or horse trails within either river corridor, although many user developed and maintained trails exist throughout the area. The trails are primarily used for fishing, hiking, and other similar recreation pursuits. The most heavily used trail leads to Steelhead Falls. This trail experiences heavy soil erosion, soil compaction and vegetation trampling problems. Other user developed trails on the Middle Deschutes include the Geneva Point, Scout Camp, and the CCC trail. On the Lower Crooked River, the Hollywood Road trail traverses primarily private land to access the canyon floor. There are also several user developed rock scrabble trails that access the Lower Crooked River from the rims. Portions of some user developed trails are eroding. Cultural resource sites and riparian areas are also affected by recreation use requir-

Hollywood Road at river mile 12.5 parallels the Lower Crooked River providing easy fishing and hiking access

ing slope stabilization, vegetation rehabilitation, or re-routing trails to protect these resources.

Recreation Developments

No developed recreation sites exist in either river corridor. However, many dispersed camping areas along the rims and within the canyons are widely used. Dispersed camping areas such as Steelhead Falls, Scout Camp, and Geneva Overlook on the Middle Deschutes include manmade features such as regulation signs and trash facilities. These areas in total receive an estimated 7,000 visits per year. Dispersed camping also occurs on the National Grasslands primarily above the canyon rims experiencing much less use than on the Middle Deschutes. Many of these sites become littered and experience impacts such as trampled vegetation and soil erosion.

Private landowners and Crooked River Ranch have developed three scenic overlooks on the Lower Crooked River. These consist of a small graveled parking areas with wooden view platforms overlooking the Lower Crooked River.

Wilderness Resource

Segment 4 of the Middle Deschutes is located entirely within the Steelhead Falls Wilderness Study Area (WSA). Since its designation, this area has been managed to retain its primitive recreational values. User developed trails within the WSA facilitate opportunities for fishing, hiking, bird watching and photography.

Although Congress identified wilderness as an outstandingly remarkable value along the entire length of the Deschutes River, all coordinating agencies have determined that segments of the Middle Deschutes River do not contain outstandingly remarkable wilderness resource values. Those values relating to wilderness have been incorporated into other sections within this chapter. The area is currently managed under WSA interim manage-

ment guidelines to protect wilderness values until Congress makes its final determination.

Commercial Recreation Use

Several guides and outfitters have permits to conduct business on both the Deschutes and Lower Crooked Rivers. However, no commercial use was reported during the 1991 and 1992 use seasons. Although they have not pursued providing rafting or kayaking trips down these rivers, new technologies could make this possible in the future. When flows are available, these rivers contain Class V and VI rapids which only the most experienced rafters and/or kayakers may be willing to attempt. Other commercial guide and outfitter possibilities may include guided fishing trips, hunting expeditions, hiking, backpacking, rockclimbing, and wildlife trips.

Geology and Soils

The geology of the Lower Crooked River and segment 4 of the Middle Deschutes River is determined to be an outstandingly remarkable value. The geologic history of the past 50 million years is dramatically displayed on the canyon walls of the Middle Deschutes and Lower Crooked Rivers. A number of volcanic eruptions occurred over thousands of years to create a large basin comprised of a variety of colorful layered basalt, ash, and sedimentary formations. The Deschutes and Crooked Rivers dissect this basin providing a unique study area for geologic interpretation.

Horse and dog packing on public lands near Squaw Creek

In this basin was deposited the Deschutes Formation which contains a diversity of volcaniclastic sediments, lava flows, pumice-fall deposits and ignimbrites. Most of the sediments are flood and debris-flow deposits that were formed when large volumes of fragmental material was supplied to the basin and provided excess sediment loads to the rivers.

Subsequent to the development of the Deschutes Formation, erosion by the two rivers cut rather steep walled canyons. Into these canyons younger intracanyon basalt flows followed the present course of the two rivers after being erupted from vents within and south of the basin. These intracanyon lava flows have since been carved by the river to form cliffs and benches comprised of brownish-black columnar jointed basalts. These dark colored rocks contrast sharply with the lighter colored ashes from previous volcanic activity. Segment 4 of the Middle Deschutes and the Lower Crooked River canyon provide the best known example of intracanyon basalt flows in Oregon.

Soils in the river corridors vary with the local topography and characteristics of the substrate. The corridors are dominated by fluvial deposits adjacent to the river and steep bedrock and talus slopes (the canyon walls) leading up to the higher plateau areas. Soils developed on the fluvial deposits are primarily river wash developed on low river terraces and islands, mainly next to the river or within the channel. The parent is mixed river sediment, ranging from silt to extremely cobbly sand with deep well drained soils with moderate permeability. In low areas of the floodplain, there is a moderate potential for erosion and deposition as a result of flooding. The steeper slopes are primarily comprised of stony cobbly loam, weathered from basalt, andesite, and ash where soil permeability is moderate and runoff is rapid. These soils are unstable and susceptible to erosion in both natural and disturbed states.

Motorized vehicle activity and foot traffic on heavy use trails contribute to soil erosion in areas confined to physical access. When these activities cause soil compaction and a direct degradation or loss of plant cover and vigor occurs, the permeability and water holding capability of the soil diminishes, the velocity and volume of runoff is increased and the extent and magnitude of soil erosion is accelerated.

A 40 to 50 foot layer of diatomaceous earth (Dicalite) can be found in segment 3 near Lower Bridge Market Road layered between two other formations. This whitish colored chalk-like deposit is a remnant of an old prehistoric sea that once covered the area. Currently, this mineral is being extracted for commercial use. In addition, surface mining operations for aggregate gravels occur on private land within State Scenic Water boundaries near Lower Bridge Market Road. Refer to Commercial Use section for more information on minerals.

Hydrology, Water Quality and Water Quantity

Middle Deschutes River

The Deschutes River generally flows in a northern direction bisecting basalt plateaus of the Cascade Mountains encompassing 10,400 square miles of watershed. It is generally clear and unique among rivers its size in that its daily flow is historically known to be constant throughout the year. This is principally the result of its major headwater streams being spring fed with very little direct surface flow input. The flow is altered by the regulation from three dams which store water for irrigation/recreation purposes.

Flows in the Middle Deschutes River segments are altered and regulated by powerplant at Bend; and dams at Crescent Lake, Crane Prairie Reservoir, and Wickiup Reservoir. In addition,

six large canals and several small ditches between Bend and Lower Bridge significantly dewater the river during the period of April through October primarily for irrigation purposes. There is a corresponding increase of water temperatures resulting from the low flows during the summer months. Overall, the water quality in all segments of the Middle Deschutes is good to excellent.

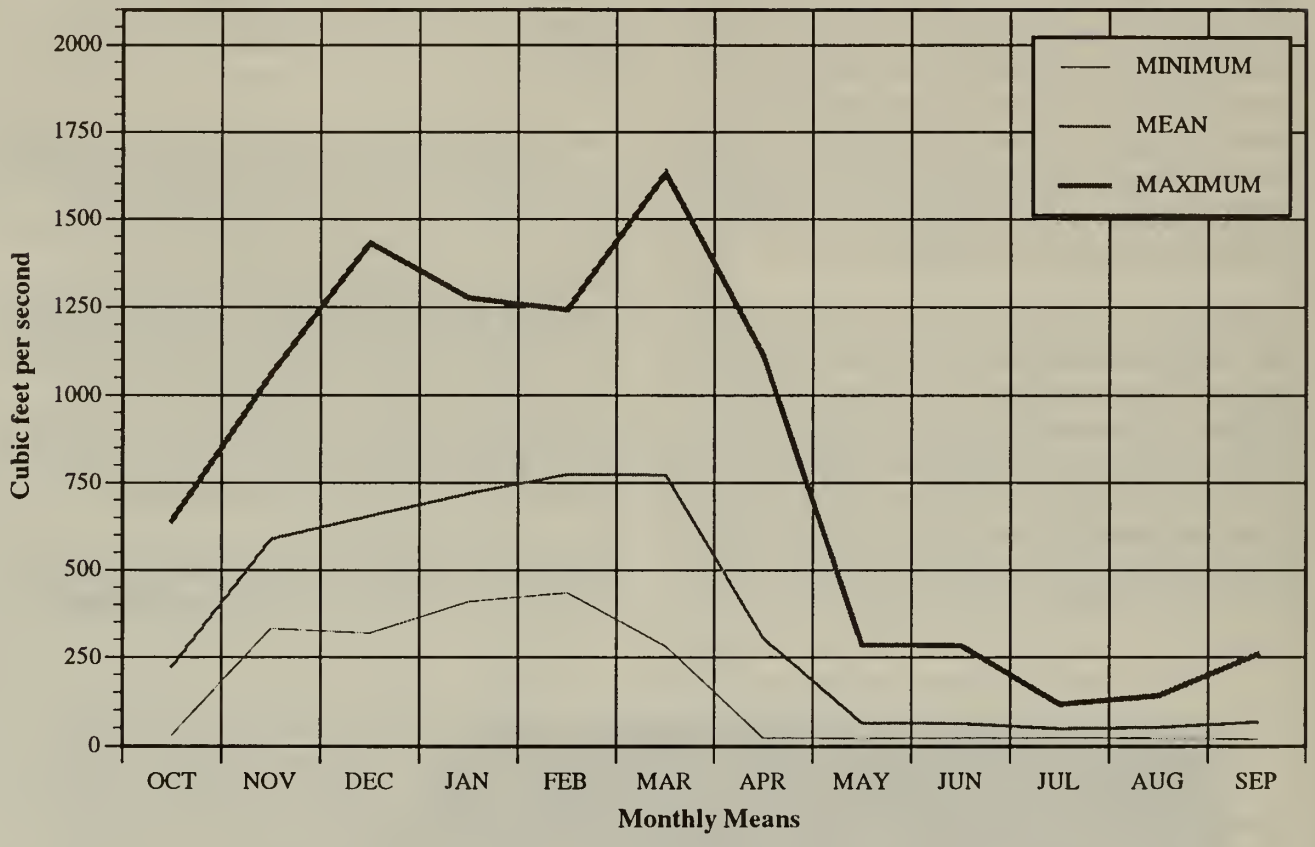
A number of springs increase water flow along the Middle Deschutes, with the most significant spring inflow occurring in segment 3 and 4. In Segment 4, Squaw Creek adds significantly to the flow. However, a portion of its flow is also diverted for irrigation purposes. Figures 1 and 2 show the respective maximum and minimum mean monthly flows just below diversions at Bend above influx of Tumalo Creek, and just below the influx of Squaw Creek. Several private water resource developments also utilize water resources within the river corridor.

The increase of water from springs and stability of flows along with the steep basalt canyons in the segments 3 and 4 has created a stream habitat and riparian zone that is extremely stable and diverse. This combination of an excellent riparian zone and stable stream flows is unique in a dry semi-arid climate environment. Canal lining projects outside of the corridor boundary, basin planning, and conducting an instream flow study would act to protect and/or enhance existing flows.

Special hydrologic features along the Middle Deschutes include: Odin, Big and Steelhead

Springs such as these add significantly to river water quality and quantity

Figure 1 - Deschutes Discharges Below Bend 1957 - 1991



Falls; several springs; water sculpted rocks; and the river canyon. These features are very prominent in segments 3 and 4 and are excellent examples of hydrologic activity within Central Oregon. Hydrologic resources in Segment 4 have been determined to be outstandingly remarkable.

Lower Crooked River

The Crooked River is subdivided into three major basins the Upper, Lower and South Fork Crooked River. The Upper Crooked River basin is from rivermile 72.5 to its headwaters and tributaries in the Ochoco National Forest (Ochoco and Maury Mountains). The South Fork Crooked River basin is further upstream and is a significant contributor to summer flows. Bowman Dam and Prineville Reservoir separates the Lower from the Upper Crooked River basins.

Flows entering this river segment are regulated by Bowman Dam (Prineville Reservoir) and Ochoco Dam (Ochoco Reservoir) on Ochoco Creek. There are numerous irrigation withdrawals between rivermile 64.5 and 17.7. At Crooked River Crossing, North Unit Irrigation Unit withdrawals an average of 70 cfs and is required to allow a minimum of 10 cfs pass the pump site. Ochoco Irrigation District is required to allow a minimum of 10 cfs pass the gates at Bowman Dam. Starting at about rivermile 21.7 there are a number of springs that contribute to significant steady flows within this river segment. These springs get increasingly larger as the river flows northward. They are especially unique within such a short

stretch of river. There are no known active water resource developments within the river corridor. Canal lining projects outside of the river corridor, basin planning, and conducting an instream flow study would act to protect and/or enhance existing flows.

The mean annual flow (years 1962-1990) at rivermile 6.7 just below Opal Springs (located downriver from the preliminary wild and scenic river boundary at rivermile 6.9) was 1561 cfs. Much of this flow is created by the small springs upriver within the segment and Opal Spring which traditionally discharges up to 240 cfs. The maximum and minimum mean monthly flows at rivermile 6.7 are shown in Figure 3. There are no perennial streams entering this segment of the Crooked River.

The water quality and quantity of the released waters from Bowman Dam are directly impacted by irrigation withdrawal. Water temperatures just below Bowman Dam remains fairly constant between 35 and 49 degrees F. The water released during the summer months for downstream irrigation provides a significant increase in summer flows and cooler temperatures for fishery values. These cooler water temperatures, increased flows and turbidity of the released waters are all modified by the irrigation withdrawal between rivermiles 64.5 and 17.7. In areas where flows are slow and shallow temperatures are known to climb as high as 80 degrees F. However, spring inflows completely modify all these parameters between rivermile 17.7 and 6.9.

Figure 2 - Deschutes Flow Near Squaw Creek 1953 - 1991

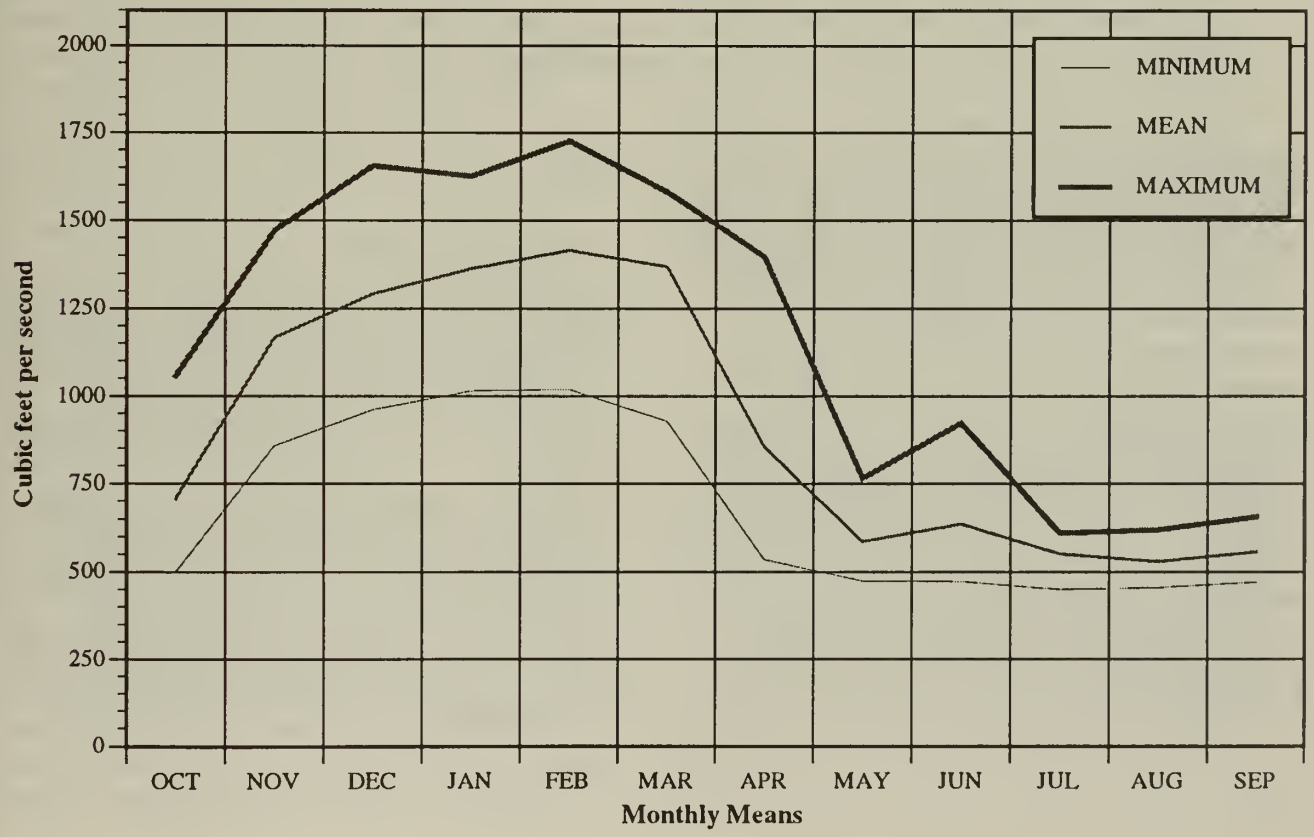
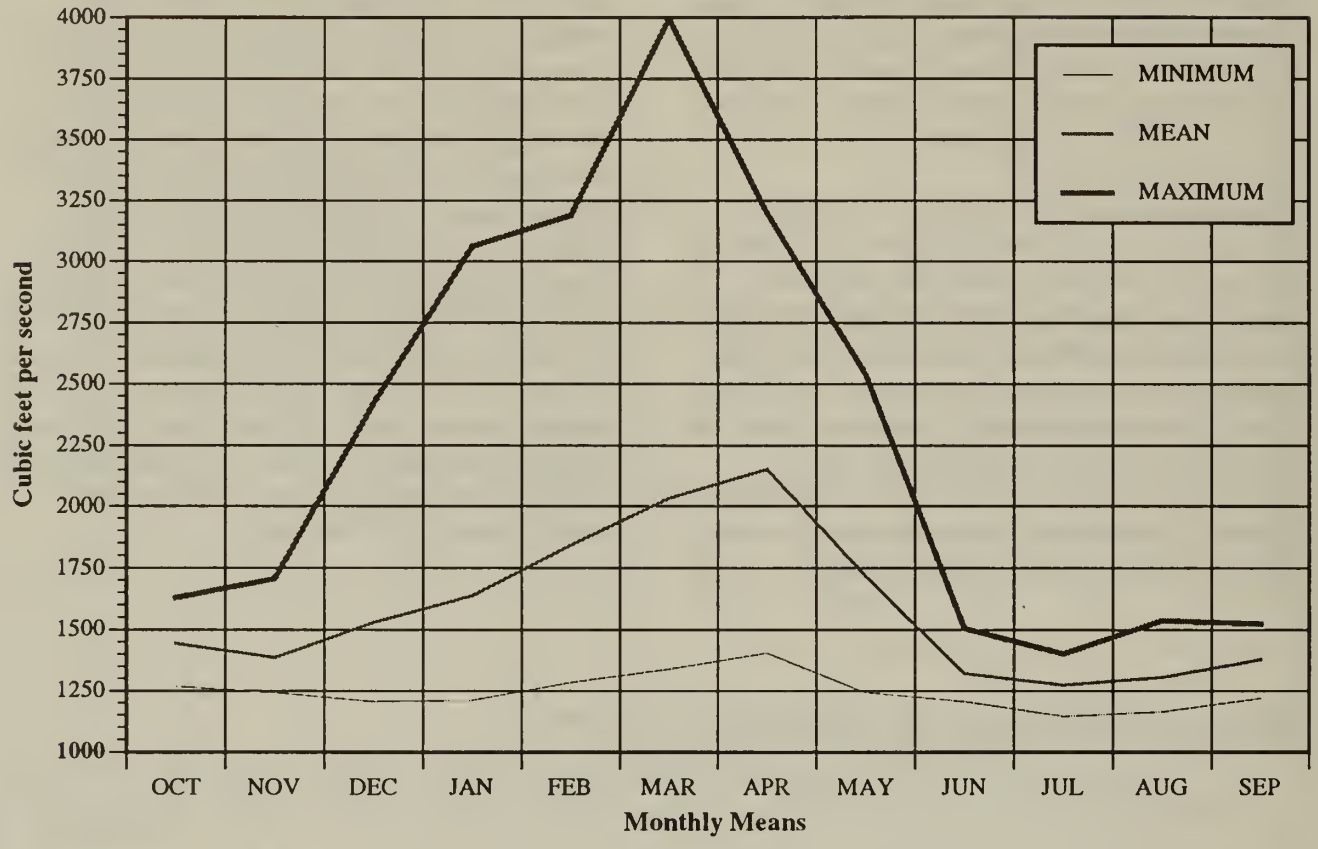


Figure 3 - Lower Crooked Discharges Near Opal Spring 1962 - 1991



Within this highly scenic segment, bank instability contributes very little to a clarity/turbidly problem. However, erosion of fine clays within the Upper Crooked River basin has left the water constantly turbid until rivermile 16 where spring inflow contributes to excellent water clarity, particularly during summer months. There are a variety of very significant springs, seeps, river sculpted rocks, waterfalls and whitewater rapid features existing within the river corridor. Created by hydrologic action, the highly scenic basalt cliffs significantly limit public access. Hydrologic resources in the Lower Crooked River Segment have been determined to be outstandingly remarkable.

Fish

Middle Deschutes River

Based on the criteria and guidelines outlined in the Oregon Department of Fish and Wildlife Wild Fish Policy (WFP) and Natural Fish Production Policy (NFPP), the Deschutes River is managed as a basic yield "wild trout" fishery. The NFPP protects and fosters natural production of fish for the present and future and to perpetuate endemic species; the WFP protects the genetic diversity of endemic fish. Both policies seek to minimize the adverse effects of human activities on the natural production of wild populations.

The Confederated Tribes of the Warms Springs have guaranteed treaty rights for "taking fish at usual and accustomed grounds and stations". This includes off reservation sites such as this segment of the Middle Deschutes River.

Fish Populations

Redband/Rainbow Trout. Rainbow trout inhabiting segments of the Middle Deschutes River are derived from a mix of wild redband/rainbow trout and hatchery raised rainbow trout. Hatchery planting was discontinued in the mid-1970's. Today, the trout are managed as a wild population. Productivity is considered to be limited due to low summer flows and warm water temperatures. There is very little information on population structure and size. One BLM inventory in 1980 reported that trout size ranged from 1 to 15 inches, with most fish 6 to 12 inches long. Reproduction does occur, however, there is very little spawning habitat.

Other Fish Species. Other fish are considered to be resident species due to Steelhead Falls and Round Butte Dam which blocks upstream migration. This includes exotic species such as small mouth bass and brown trout as well as endemic fish such as whitefish, bull trout, coarsescale and finescale sucker, squawfish, bridgelip sucker, tui chub, dace, sickleback, chiselmouth sucker, skulpin, and roach (ODFW 1991). Fresh water mussels and a variety of aquatic insects are also known to inhabit the river. Very little information on population size is available for these species.

Anadromous Fish. Anadromous fish are only found below Steelhead Falls and are remnants of historic runs that were cut off by the construction of Round Butte Dam. Populations of kokanee which inhabit Lake Billy Chinook enter segment 4 below Steelhead Falls, many of which spawn in Squaw Creek. At times, chinook salmon can still be found. Historically, spring and fall chinook spawning occurred through the entire mainstream of the Deschutes River. Steelhead falls is currently a natural barrier to anadromous fish. A fish ladder was constructed there many years ago but is presently nonfunctional.

Population Size. ODFW recently conducted snorkeling and electrofish surveys within segments 3 and 4. Although not quantitative, it does provide an indication of the relative number and diversity of species found in these segments. Between Odin Falls and Steelhead Falls rainbow trout were found to be the primary fish specie. Brown trout and whitefish were scattered throughout this segment. Below Steelhead Falls a wide diversity of fish species were found. Whitefish and coarsescale suckers were the primary species with rainbow trout, brown trout, and bull trout also scattered throughout this segment. At different times of the year, kokanee and chinook salmon migrate through segment 4 to spawn in Squaw Creek.

Special Status Species. Redband/rainbow trout and bull trout are considered by the State of Oregon as a "species of concern" which the BLM considers as a special status or sensitive species. BLM policy requires that all management actions, planned or developed that would affect these species or their habitat, would not contribute to the need to list them under the Endangered Species Act.

Fish Habitat

Fish Habitat along the Middle Deschutes River is supported by excellent instream and escape cover, moderate vegetative canopy, occasional deep pools, and a variety of cold water springs. Squaw Creek, a major tributary to the Middle Deschutes, provides spawning and rearing habitat for both resident and anadromous fish. Except for the effects of seasonal flow fluctuations, the habitat in all segments is rated as "good".

An inventory of fish habitat was conducted by BLM in the spring of 1980. Within portions of segment 3, the overall rating of habitat was "good". A summary of the inventory is shown in Text Box 2. Collection of detailed and quantitative habitat inventory data will continue into the future.

Although a very important recreation opportunity, the fisheries resource in Segment 3 is determined to be less than outstandingly remarkable. Based upon the potential through long-term restoration of fish habitat and populations, the fishery may later be determined to be an outstandingly remarkable value. In segment 4, the quality and importance of the fisheries habitat and its resulting diversity of resident and remnant anadromous species qualifies this resource to be considered an outstandingly remarkable value. This finding confirms the Congressional record relating to fisheries values of the Middle Deschutes River.

Lower Crooked River

Based on the criteria and guidelines outlined in the Oregon Department of Fish and Wildlife Wild Fish Policy (WFP) and Natural Fish Production Policy (NFPP), the Lower Crooked River is managed as a basic yield "wild trout" fishery. Just as discussed for the Middle Deschutes, the NFPP protects and fosters natural production of fish for the present and future and to perpetuate endemic species; the WFP protects the genetic diversity of endemic fish. Both policies seek to minimize the adverse effects of human activities on the natural production of wild populations.

Abandoned fish ladder at Big Falls, constructed in the 1920's by Oregon State Fish & Game Commission to enhance the native fishery of the Upper Deschutes

Text Box 2 - BLM Fish Habitat Inventory, 1980

Large Structural Material - The river runs through a canyon characterized by basalt rims and talus slopes. Large structural material in the river consists of basalt boulders averaging three feet in diameter. These features provide excellent instream cover.

Small Structural Material - Very few large fallen branches and logs are found in the river because the riparian vegetation mostly consists of willow, alder and birch. These trees are characteristic of small, lightweight limbs that float downstream easily and decay rapidly. They provide the primary source of organic material in the river. In addition, a lack of vegetative canopy in this area results in an increase in water temperatures during summer months and a limited amount of food for the fishery.

Escape Cover - The large basalt boulders provide stable escape cover for fish.

Pools - Stream gradient is generally to steep for very many good quality pools. Where there are deep pools there is abundant cover provided by basalt boulders. Less than 5 percent of the channel is characterized as pool habitat with pool depth equal to only 5 to 10 percent of stream width. Pool to riffle ratio is 10 to 90. The ideal ratio is 50 to 50.

Spawning Area - Suitable spawning gravel is found behind large boulders and in a few isolated riffles. On average, less than 15 percent of the channel is useable for spawning.

The Confederated Tribes of the Warms Springs have guaranteed treaty rights for "taking fish at usual and accustomed grounds and stations". This includes off reservation sites such as this segment of the Lower Crooked River.

Fish Populations

Redband/Rainbow Trout. Rainbow trout inhabiting this segment are derived from a mix of wild redband/rainbow trout and hatchery raised rainbow. Although there are no stocking programs for this river segment, some hatchery fingerlings probably enter the present native population from Prineville Reservoir by passing through the Bowman Dam outlet works and spillway. Although there is no site specific data for this river segment, populations are thought to be stable but lower than in the 1960's. Today, these fish are managed as a wild population.

Other Fish Species. Very little information on population size and distribution is available for the other fish species. A list of these species include: Lahontan strain cutthroat trout, mountain whitefish, small and largemouth bass, coarsescale sucker, bridgelip sucker, chiselmouth chub, squawfish, dace and brown bullhead (ODFW 1991). Fresh water mussels and a variety of aquatic insects are also known to inhabit the river. Historically, bull trout, a "species of concern", from Lake Billy Chinook/Metolious system were caught in the Lower Crooked River. The extent of their migrations are unknown but anglers reported catching bull trout as recently as the late 1970's.

Anadromous Fish. Anadromous fish no longer enter this river segment. Historically, runs of coho, kokanee salmon and steelhead utilized key spawning and rearing areas. Construction of a dam at Opal Springs now prevents upstream movement.

Special Status Species. Redband/rainbow trout, cutthroat trout, and bull trout are considered by the State of Oregon as a "State Sensitive Species", which the BLM considers as a special status or sensitive species. BLM policy requires

that all management actions, planned or developed that would affect these species or their habitat, would not contribute to the need to list these species under the Endangered Species Act.

Fish Habitat

At this time, there is little information available to assess the significance of habitat values. Data acquisition for this segment will be conducted during the summer of 1993. In addition, an Instream Flow Study will be conducted upstream from this segment, which will provide additional data related to habitat values.

Habitat utilization is considered to be limited due to low summer flows and reservoir filling during the winter, but cold spring water inflow helps support a number of mature resident trout throughout the segment. Reproduction is occurring, however, little spawning and rearing habitat actually exists.

There is an abundance of vegetative canopy over the rivers edge offering moderate amount of food and cover. Occasional deep pools and boulders provide escape cover. Numerous riffles also provide valuable fish habitat. The number and variety of cold water springs are considered to be the most important habitat value in this segment.

Although a very important recreation opportunity, the fisheries resource in Lower Crooked River segment is determined to be less than outstandingly remarkable. Based upon the potential through long-term restoration of fish habitat and populations, the fishery may later be determined to be an outstandingly remarkable value.

Wildlife

Both rivers contain outstandingly remarkable wildlife and wildlife habitat resource values. BLM, National Grasslands, and ODFW wildlife inventories have identified a wide variety of wildlife species that exist within the Middle Deschutes and Lower Crooked River segments. These species are generally found within the big sage/grass, grass and riparian habitat types as well as other micro environments within the river corridors. Wildlife populations within these river segments are yet to be determined. For detailed information on wildlife habitat and populations contact Prineville District BLM, Ochoco National Forest, or ODFW in Bend Oregon.

The Middle Deschutes and Lower Crooked river segments contain a variety of plant communities used by many wildlife species. Waterfowl use both river corridors for nesting and brood-rearing. Canadian geese nest in the cliffs within the canyon and travel with their broods to these rivers. Resident and migrant species of waterfowl occupy the river's open water until late winter.

The profusion of high vertical cliff faces next to the river surrounded by open grassland country with an abundance of small mammals and birds also provides prime habitat for many raptors including: bald and golden eagles, osprey, prairie falcon, ravens, owls, and possibly peregrine falcons. The bald eagle and peregrine falcon are threatened and endangered species. The bald eagle is known to winter along the Deschutes River downriver from Lower Bridge and also within the Lower Crooked River segment. Ongoing raptor studies have yet to determine if peregrine falcons actually inhabit the river corridors. Specialists agree that introduction of peregrine falcons, especially on the Lower Crooked River segment, could benefit this endangered species.

Talus slopes within the canyon areas provide excellent habitat for a variety of wildlife species, including this diamondback rattlesnake

Cliffs, talus slopes, and caves are three unique habitats that exist within the two river corridors. These features have abrupt, relatively stable edges, predictable airflow patterns and provide relatively secure habitat for wildlife. These unique habitats comprise a small percentage of the total land base and concentrate a variety of wildlife into a small area. They generally sustain specific wildlife that cannot live in other habitat types within the corridors. Once disturbed, these unique habitats cannot be replaced or artificially created.

Cliffs are steep, vertical or overhanging rock faces. Cliffs of igneous rock are more important to wildlife than sedimentary rock. Basalt and andesite cliffs have cracks, ledges and occasionally deep caves that provide habitat for many species. High cliffs adjacent to permanent water sources such as the Middle Deschutes and Lower Crooked Rivers are the most important habitat for wildlife.

Species that find these cliffs necessary for reproduction and feeding include: western fence lizard, side-blotched lizard, golden eagle, prairie falcon, peregrine, American kestrel, chuckar, barn owl, great horned owl, common nighthawk, black swift, Vaux's swift, white-throated swift, Say's phoebe, barn swallow, cliff swallow, common raven, canyon wren, rock wren, Townsend's solitaire, starlings, grey-crowned rosy finch, black rosy finch, little brown myotis, California myotis, small-footed myotis, western pipistrelle, big brown bat, spotted bat, pallid bat, least chipmunk, yellow

pine chipmunk, yellow-bellied marmot, mantled ground long-tailed weasel, spotted skunk, and bobcat.

Canadian geese have been observed nesting in the cliffs near Lake Billy Chinook. Other species that have been observed nesting on the cliffs of theses rivers include bald and golden eagle, prairie falcon and raven. A large population of rock dove, a major food source for birds of prey has been observed in the Lower Crooked River canyon. A survey to determine which birds of prey use the cliff habitat will be completed in 1992.

Talus is the accumulation of broken rocks at the base of cliffs or steep slopes. The important structural components of talus include length, depth, width, type and size-class of rock. A large, deep, stable talus of basalt or andesite is important as wildlife habitat. Talus slopes are common throughout both river canyons. Talus concentrates vertebrate animals such as frogs and toads, lizards, snakes, birds and other small animals in a small area.

Species that find talus necessary for reproduction and feeding include: western fence lizard, side-blotched lizard, western stink, western whiptail, yellow-bellied racer, rubber boa, striped whipsnake, rattlesnake, chukar, canyon and rock wren, vagrant shrew, pika, mountain cottontail, least chipmunk, yellow pine chipmunk, yellow-bellied marmot, Columbian ground squirrel, Golden Mantled ground squirrel , grasshopper mouse, bushy-tailed woodrat, mountain vole, sagebrush vole, long-tailed weasel, badger and bobcat. However, no extensive wildlife surveys have been completed of the talus slopes to verify their presence.

Caves are a natural underground chamber open to the surface. Within the river canyons there are many types of caves, but most are shallow. Caves provide shelter from extreme weather, varying degrees of darkness and solitude from the outside world. The types of caves found in the river canyons provide habitat for deer, mice, bushy-tailed woodrats, bobcats, coyotes, porcupines, and occasionally bats and other small mammals.

Both resident and wintering populations of elk and mule deer reside within these corridors. The Middle Deschutes River and portions of the Lower Crooked River corridor have been identified as crucial mule deer winter range. This winter range is an important portion of the Metolius deer winter range. A small population of wintering antelope also occupy the western portion of the Lower Crooked River corridor.

Upland game bird species such as chukar and California valley quail utilize the rocky cliffs, slopes and riparian communities. Non-game bird species such as great blue herons, kingfishers, shorebirds, raptors and a very significant population of songbirds utilize the riparian areas along both river corridors.

Furbearers such as river otters, mink, raccoon, and beaver inhabit both rivers utilizing the corridor to feed on fish, mollusks and willow.

At times, beaver, deer and a variety of waterfowl become a nuisance. These animals feed on private landscape vegetation and/or agricultural crops creating thousands of dollars in damage annually. ODFW responds to 40-60 damage complaints per month. If damage continues or health problems become an issue ODFW may relocate animals or have special hunts.

Cultural Resources

Prehistory

The Middle Deschutes and Lower Crooked River corridors are situated in a cultural contact zone between the Columbia Plateau and Northern Great Basin culture areas. Lifeways and

subsistence practices parallel those believed to have been employed by inhabitants of both regions. Subsistence practices occurred around seasonal use and procurement of riparian and upland resources.

Evidence that rare and/or special activities took place in the river canyons is represented by lithic scatters or flaking stations, shell middens, rockshelters, rock features, and rock art. At present, there are 83 recorded prehistoric sites within the Middle Deschutes and Lower Crooked Wild and Scenic River corridors. Many of the sites have the potential to contribute to the understanding and interpretation of the prehistory of the Deschutes River and the region and are currently considered to be eligible for inclusion in the National Register of Historic Places.

Several of the sites within the Middle Deschutes segments exhibit characteristics unique to the central Oregon area and were first recorded by Dr. Luther Cressman in the 1930's and in the early 1960's by Dr. Ross and Dr. Cressman (Round Butte Dam project). Of particular merit is the "Cove Park Boulders" petroglyphs, one of which was moved to the State Park as mitigation during the impoundment of water for the PGE Round Butte Dam project, they were first described by Cressman in 1937.

The Lower Crooked River segment exemplifies rare and/or special activities that took place as evidenced by the presence of rock art panels. These panels were first described by Dr. Cressman (1937) and contain what he characterized as "intriguing" and "complex design[s]". The panels appear to be unique and unusual for the central Oregon area and are located in a remote but accessible portion of the river canyon. The panels were recently re-discovered during river inventory in 1991.

It is likely that numerous other, yet undiscovered, sites exist within the river corridors as prehistoric people owed much of their existence to riverine resources. Evaluations of known sites and additional surveys and/or excavations are necessary to provide more complete information concerning the prehistoric use of the rivers. This is important to understanding and interpreting the rivers' prehistoric cultural resources. It is likely that many sites found in future surveys would have the potential to contribute to the understanding and interpretation of the prehistory of the river corridors and the region and should be considered eligible for inclusion in the National Register of Historic Places.

History

Explorers and fur trappers visited the Deschutes and Crooked River country in the early 1800's. The U.S. Government obtained the lands surrounding and including these river canyons under treaty with the Indian Tribes of Middle Oregon in 1855. Until ratification of this treaty by Congress, patent land title could not be conferred. Euro-American use was somewhat limited until the 1860's when gold miners and their supporters, military personnel, and immigrants began entering the area. The completion of the Willamette Valley and Cascade Mountain Military Road in 1862 greatly facilitated the movement of people, livestock, and goods into central and eastern Oregon. Homesteading activity was relatively minimal during the mid-late 1800's and was somewhat related to the mining of gold and precious minerals, to the east, in Canyon City. It was not until railroad construction began at the turn of the century that the region's transportation system was improved, resulting in the settlement of permanent towns. By the turn of the century homestead activity was quite extensive, aided in part by the cessation of mining ventures, increase in stockraising operations, and the passage of the Carey Land Act in 1894. Irrigation developments at this point in time were of two general types, small-scale (ditch "companies", districts,

etc.) and speculative ("robber baron's" land schemes). This period was followed by federal involvement in reclamation during the pre-war years that led to development of extensive irrigation canals fed by large storage reservoirs in the Upper Deschutes drainage. Fisheries management projects and commercial irrigated agriculture were the outgrowth of these reclamation projects.

Historic site types within the Middle Deschutes and Lower Crooked River corridors include: remains of overland travel and river crossings, homestead and stockraising remains, railroad construction and habitation sites, fisheries enhancement, and irrigation features and structures. There is only limited evidence that mining of gold and precious minerals took place in the river corridors. One stamp mill was reported in the Middle Deschutes River canyon so there is the potential that other mining related features may also be present.

These historic structures and features formed significant events in the settlement and economic development of the central Oregon region. Exploration of the area by Hudson Bay Company trappers (Peter Skene Ogden, Finan McDonald, et al.) and others (Nathaniel J. Wyeth and John C. Fremont etc.) is documented in the various archival records and the explorers' personal journals continue to be an important source of reference regarding natural history, company exploration, and ethnology. However, to date, few if any physical remains of these early expeditions have been located and none are known to exist in the river corridors currently under review.

Cultural resources are abundant in both river corridors

Deschutes River Segment 3 contains the Lower Bridge site, one of the most significant river crossings associated with early wagon travel. Physical remains of this crossing are evidenced by wagon ruts and other related features. This crossing is considered to be eligible for inclusion in the National Register of Historic Places.

Segment 4 and the Lower Crooked River segment contain no identified historic properties or physical remains. However, as with Segment 3, the potential exists for previously unidentified evidence of early fur trapping expeditions and other historic events to be discovered in future inventories.

Traditional Use, Culture

The Plateau and Great Basin cultures extended over much of the western United States and into Canada and Mexico, taking in numerous cultural-linguistic groups belonging to the Penutian and Aztec-Tanoan macro-phylum of languages. Although the two cultures spoke separate dialects and inhabited somewhat different and varying environmental zones, they shared some principal characteristics. Both cultural groups were known to have been hunters and gatherers as well as fishermen who practiced a semi-nomadic lifeway in their quest for food and other essential resources. Though temporary camps and summer and winter villages were established, seasonal travel to favored locations for the procurement of fish, game or plants was a necessary part of life.

Prehistoric use and remains are evident within the Middle Deschutes and Lower Crooked River canyons indicating that native people visited the rivers and utilized their varying resources. The presence of riverine dependent plants, land, and aquatic animals known to have been collected, based upon ethnohistorical evidence, by Plateau and Great Basin people suggest that traditional cultural uses were present at least through the contact and pre-reservation period. Although no specific locational information is available at this time, it is likely that these traditional activities have continued, to a more limited degree, into the present era. Further ethnographic research may reveal that specific locales in the river corridors were and are the focus of traditional cultural activities. Currently, the known traditional activities in the vicinity of the Middle Deschutes and Lower Crooked Rivers include the procurement of game, fish, native plants, and other materials for subsistence, medicinal, ceremonial and religious purposes by members of the Confederated Tribes of the Warm Springs Reservation.

Based on the combination of prehistoric and historic sites found along the Middle Deschutes River and the traditional uses associated with the area, cultural resource values in segments 3 and 4 are determined to be outstandingly remarkable. Based upon the archaeological and ethnohistoric evidence the Lower Crooked River segment are considered to be of significant value at this time.

Vegetation and Ecology

The Middle Deschutes and Lower Crooked River corridors consist of two adjacent river segments, at once both similar and distinct in their botanical composition and values.

Both are within relatively steep canyons and contain similar upland vegetation consisting of western juniper (*Juniperus occidentalis*), sagebrush (*Artemisia spp.*), bunchgrasses (predominately bluebunch wheatgrass, (*Agropyron spicatum*)), and Idaho fescue (*Festuca idahoensis*) on the steep slopes. Sparsely vegetated basalt cliffs and talus slopes are found in both canyons as well, containing mock-orange (*Philadelphus lewisii*), Douglas' spiraea (*Spiraea douglasii*), balsamroot (*Balsamorhiza spp.*), snowberry (*Symphoricarpos oreophilus*) and penstemon

(*Penstemon spp.*). The western juniper is generally more abundant in the southern portions of the river segments.

Where the boundaries include the tableland above the river canyons there are also small areas of rocky "biscuit-scabland". These areas (also known as "mounded prairie") are characterized by big sagebrush (*Artemisa tridentata*) and bunchgrass, either bluebunch wheatgrass or Idaho fescue on the mounds, and stiff sagebrush (*Artemisia rigida*) and Sandberg's bluegrass (*Poa secunda*) on the intermounds. All of the upland plant associations, while in predominately late-seral ecological condition, are common in the region and do not possess outstandingly remarkable values.

The riparian communities, although basically similar as to species composition, are different and each possess outstandingly remarkable values. The riparian vegetation in both segments is generally dominated by a woody shrub or tree layer consisting of alder (*Alnus spp.*), red-osier dogwood (*Cornus stolonifera*) and willows (*Salix spp.*), with the specific composition and presence of each dictated by the site. Understory and associated species include chokecherry (*Prunus spp.*), rose (*Rosa spp.*), clematis (*Clematis spp.*), sedge (*Carex spp.*), rush (*Juncus spp.*) and various grasses. In both segments, the condition of the riparian zone is generally late-seral to climax.

The Middle Deschutes River segment possesses two outstandingly remarkable botanical/ecological values. First, the riparian vegetation, while not as spectacular as in the Lower Crooked River segment, is nonetheless in an ecological condition unusual for similar areas within the region. The second and primary value is that this segment occupies a significant portion of the known range of Estes' wormwood (*Artemisia ludoviciana ssp. estesii*). The known worldwide range of this clonal, herbaceous sagebrush is found within the riparian zone of the Deschutes River, from the northern boundary of this segment south, to Dillon Falls in the Deschutes National Forest. This species is classified as a Category 2 Candidate for listing as endangered/threatened by the Federal government and is classified as threatened/endangered throughout its range (List 1) by the Oregon Natural Heritage Data Base. While not documented, this species would also be suspected in the Lower Crooked River segment.

The Lower Crooked River segment possesses outstandingly remarkable botanical/ecological values in that much of the riparian area is characterized by a mature white alder (*Alnus rhombifolia*)/red-osier dogwood community with a continuous canopy of up to 30 feet high. The extreme upland slopes of this segment and resultant inaccessibility have resulted in few human-related intrusions, and the area is in near-pristine condition. This is unusual for a riparian area in this region.

Land and Commercial Resource Uses

Public lands within the river corridors are generally reserved for recreation and conservation of natural resource values as described in previous sections. Private lands within the corridors are primarily rural residential development areas with large blocks of land zoned for agricultural use. The majority of residential parcels have not yet been developed. Current zoning ordinances in Deschutes and Jefferson counties recognize the natural significance of the wild and scenic river corridors. In addition, land use development proposals on the Middle Deschutes River segments within the State Scenic Waterway (up to 1\4 mile from the river) are referred to State Parks for review.

Segment 3 and 4 on the Middle Deschutes River are classified as State Scenic Waterway. It is managed by the Scenic Waterways Program of the Oregon State Parks and Recreation Depart-

ment. Proposals for development and land use changes must be reviewed by the Scenic Waterways Program for visual and conservation considerations before they are initiated.

Navigability and State Ownership of the River Bed and Banks

State ownership of the beds of navigable waterbodies was granted to Oregon in 1859 as an incidence of statehood and is an inherent attribute of state sovereignty protected by the U.S. Constitution. The beds of non-navigable waterbodies remained in the ownership of the United States or its grantees. The navigability of the Middle Deschutes and Lower Crooked Rivers has not been established. Currently, both the state, federal government and private property owners, claim ownership of the river's bed and bank. This river plan does not propose to address the issue of navigability. Rather, the river plan is intended to provide a management direction for both rivers.

Under state law, the Division of State Lands (DSL) is responsible for the management of the beds and banks of navigable waterbodies (ORS 274.005-274.590). DSL is the administrative arm of the State Land Board, composed of the Governor, Secretary of State, and State Treasurer. Under constitutional and statutory guidelines, the Board is responsible for managing the assets of the Common School Fund. These state-claimed assets include the beds and banks of Oregon's navigable waterways and are to be managed for the greatest benefit of the people of this state, consistent with the conservation of this resource under sound techniques of land management. Protection of public trust values of navigation, fisheries, and public recreation are of paramount importance, too.

The original federal test for determining navigability was established in *The Daniel Ball* case over 100 years ago. This U.S. Supreme Court admiralty case clarified that rives "are navigable in fact when they are used, or susceptible of being used, in their ordinary condition, as highways of commerce...." Interpreting the requirement, subsequent court decisions have adopted this test for title purposes and have ruled that a waterbody is navigable if it was capable of use, at the time of statehood, as a public highway for transporting goods or for travel in the customary modes of trade and travel on water.

DSL has determined that there is sufficient evidence to support a claim of navigability and state ownership for the beds and banks of the Middle Deschutes and Lower Crooked River. The position of the BLM and the U.S. Forest Service is that the navigability of the river has not been established.

For purposes of managing the above portion of these rivers, any non-federal activities or land uses such as new utility or transportation corridors and boat ramps or similar facilities that impose into or cross a waterway below ordinary high water will require an easement from the State Land Board. Existing non-federal facilities will require an easement at such time as they undergo major structural alteration, replacement, or relocation. In addition, removal of sand and gravel requires a royalty lease and any non-federal use that occupies any area of submerged or submersible land requires a waterway lease.

Further, the DSL also administers the State's Removal-Fill Law which protects Oregon's waterways from uncontrolled alteration. The law requires a permit for fill or removal of more than 50 cubic yards of material within the State's waterways. The permit-review process involves coordination with the natural resource and land use agencies from the local through the federal levels. Within Oregon Scenic Waterways, special authorization is needed from the Board and DSL for "any alteration of the beds and banks" of the Deschutes River within the

plan area. (ORS 390.835)
Nothing set forth herein shall limit the ability of the Bureau of Land Management or U.S. Forest Service to administer these rivers. The Bureau of Land Management, U.S. Forest Service, State, County, and local governments will continue to work together to assure that the public trust interest and the purpose of the Wild and Scenic Rivers Act are met.

Livestock Grazing

Due to the steep walled canyons with limited access, livestock do not usually graze within the river canyons. They reach the river approximately 3.5 miles downriver from Steelhead Falls, but cannot easily move up and down the corridor for long distances as a result of steep and rocky terrain. Domestic livestock grazing occurs primarily on the upland rims and plateaus. Approximately 97 annual unit months (AUMS) of livestock use are authorized on BLM public lands within the planning area. Approximately 150 AUMS of use are authorized on National Grasslands within the planning area. Refer to Appendix F for grazing allotment boundary map.

Commercial Use

Several commercial uses occur on private lands within the Middle Deschutes river corridor. These include a Dicalite mining operation near Lower Bridge, agriculture and farming operations north of Lower Bridge on the west side of the Middle Deschutes River. On the Lower Crooked River, Crooked River Ranch has zoned a small area on the west side of the river for commercial development. Presently the area has a ministorage operation. The Opal Springs water development and diversion is also a commercial use which occurs near the upper end of the river, but is outside the designated wild and scenic river corridor.

Mineral Potential

Public lands administered by the Bureau of Land Management are subject to the 1872 Mining Law as described in the Brothers/LaPine Resource Management Plan. The Crooked River National Grasslands on the Ochoco National Forest, however, are all acquired lands. Therefore, National Grasslands are not subject to the 1872 Mining Law. National Grasslands are administered under the Bankhead-Jones Farm Tenant Act and are not available for filing mining claims. Prospecting permits and leases may be issued on lands administered by the National Grasslands as described in the Crooked River National Grassland Land and Resource Management Plan.

Minerals are classified as locatable, leasable, or saleable. Locatable minerals are deposits that are subject to disposal under the 1872 Mining Law. This law allows individuals to locate, develop and patent mining claims on public domain lands. Gold, silver, mercury and diatomite are locatable minerals. Leasable minerals are exempted from the 1872 mining law. Instead, these minerals are disposed of through a leasing system. On public domain lands, energy and fertilizer minerals are leasable. On acquired lands, all minerals (except saleable minerals) are leasable. Saleable, or common variety minerals, include sand, gravel, cinders and stone. They are disposed of through a permit system under the Materials Act of 1947 as amended. On acquired lands, common variety minerals may only be sold to public agencies and for public purposes.

The area around the Middle Deschutes and Lower Crooked Rivers is not considered valuable for oil, gas and geothermal development. There are currently no known leases on National Grassland or BLM public lands in this area. Some BLM public lands near Lower Bridge may have potential for diatomite deposits.

Diatomaceous deposits near Lower Bridge were mined extensively in the 1930's and 40's

Diatomaceous deposits that produced good-quality filter grade material are located and were extracted off of private lands within the river corridor near Lower Bridge. These lands were mined extensively during the 1930's and 1940's and operations continued until 1961 when filter-grade diatomite was mined out. (Peterson and others, 1976). These diatomaceous beds may represent higher parts of the Madras Formation and thin out laterally so they are limited in their geographic area. The remaining diatomite is too thin and discontinuous to be of resource interest according to the 1982 USGS, Energy Resource Area Open File Report for the Lower Bridge area.

Although more than 700 placer claims were located in and around this planning area between 1906 and 1975, only two claims were valid in 1982 and the USGS report determined that no anomalous metal content was detected. (G. Walker) One claim for commercial float rock was found on BLM public lands in 1992.

Several cinder and gravel material sources are identified on the National Grasslands within the river corridors. These include potential sources at Geneva and Grandview, on the west side of the Middle Deschutes River. Some volcanic rock suitable for road construction purposes is located in parts of the Middle Deschutes river corridor, but better quality material is abundantly available elsewhere which is more readily accessible. Two surface mining operations for aggregate gravels occur on private lands near Lower Bridge Market Road.

Utility and Transmission Corridors

One woodpole powerline is highly visible downriver from Steelhead Falls on the Middle Deschutes River. It is located on private property. One major powerline is located adjacent to Crooked River Ranch on the Lower Crooked River near the clubhouse. Other less observable powerlines are scattered throughout both river corridors.

A utility/transmission corridor is identified in the Crooked River National Grassland Management Plan that crosses the Crooked River approximately 1/4 mile downriver from the Highway 97 bridge. If developed, the lines and structures would be visible from the river.

Air

Air quality in the river corridors is excellent, with visibility limited only by terrain. Minor localized sources of air pollution in the canyons exist in the form of automobile exhaust, road dust, and smoke from adjacent field burning. Campfires are prohibited during most of the high use season, so are not a threat to air quality.

Socioeconomics

The Middle Deschutes River is split between Deschutes and Jefferson counties, while the entire segment of the Lower Crooked River lies within Jefferson county. These two counties have major regional transportation routes in them that provide access to significant markets throughout the state. Significant markets in the state for goods produced on the counties include: Bend, Portland, Eugene, and Salem. Deschutes county has shown significant growth in the past decade. Population, employment, and personal income have all increased. The majority of these increases can be attributed to the growth of Bend and surrounding communities. Jefferson county has maintained existing levels of population, total employment and personal income and in most recent years shown growth despite national economic trends.

Population

In both Deschutes and Jefferson counties population increased 13 percent and 19 percent respectively, between 1989 and 1991. These rates are greater than the statewide rate of 5 percent during the same period. Between 1980 and 1991 Deschutes county showed population increases every year except 1983. Both Deschutes and Jefferson counties are experiencing an in-migration of retirees as well as a very high increase in tourism to the 13 destination resorts in the area. The recent strength of population growth in the region despite a downturn in national economic indicators indicates that population in the region will continue to grow in the future. Refer to Table 6 - Population Trends.

Economy

Total wage and salary employment in Deschutes county increased significantly (28.9 percent) during the 1985-1989 period. This growth continued in all sectors except manufacturing, into 1990 and 1991. Employment in the construction industry increased more than 100 percent in the most recent of five years (1987-1991), an indicator of the development Deschutes county is experiencing.

Jefferson county experienced the highest percent of growth (33 percent) in wage in salary employment of the two counties. Manufacturing employment accounted for much of the increase, totalling 610 new jobs between 1985 and 1989. The lumber and wood product sector is a significant manufacturing employer in the county. Growth in this sector continued during

Table 6 - Population Trends

County/Community	1980	1985	1990
Deschutes	62,142	65,400	75,600
Bend	17,265	18,450	20,570
Redmond	6,452	6,740	7,135
Sisters	696	740	690
Unincorporated	37,73	39,470	47,205
Jefferson	11,599	12,150	13,700
Culver	514	505	565
Madras	2,235	2,320	3,400
Metolius	451	455	450
Unincorporated	8,399	8,870	9,289

Source: Oregon Employment Division

the 1985-1989 period and leveled off during 1990 and 1991. Refer to Table 7 - Average Employment by Industry, 1991.

Personal income information is one of the best indicators of wealth. This is because personal income includes non-earned income such as dividends, interest and rent as well as transfer payments of all types. Also captured are the earning of persons not covered by unemployment insurance, such as proprietors, and most agricultural workers. State employment and payroll data does no generally include these workers.

In Deschutes county dividends, interest, and rent together with transfer payments are approximately 38 percent of total personal income. Agricultural income is a small portion, approximately 2 percent of total personal income in the county. Personal income generated by manufacturing industries represents approximately 12 percent of total personal income. Between 1984 and 1989 personal income generated by the lumber and wood products industry declined from 75 percent to 66 percent of total manufacturing personal income. This trend is expected to continue into the future. Trade (10 percent), services (15 percent), and government (10 percent) also contribute to total personal income in Deschutes county. A positive adjustment for residence show that income earned outside of Deschutes county by residents is greater than income earned within the county by non-residents. The average household income for Deschutes county is $30,042.

Dividends, interest, rent, and transfer payments are approximately 35 percent of total personal income in Jefferson county. Personal income generated by farming varies as a percentage of total personal income annually, ranging from 9.7 percent to 14.3 percent of total personal income during the 1984 - 1989 period examined. The data suggests a significantly greater dependence on agriculture than the statewide average. Approximately 20 percent of total personal income in the county is derived from the manufacturing sector. Historically, the lumber and

wood products sector has been a major source of personal income in the county. Its importance is declining as other manufacturing industries develop. Between 1984 and 1989, personal income generated in the lumber and wood products industry declined from 82 percent to 76 percent of total manufacturing personal income. This trend is expected to continue as manufacturing in the county continues to diversify. Trade (9 percent), services (12 percent), and government (12 percent) also contribute to total personal income in Jefferson county. A negative adjustment for residence shows that income earned within Jefferson county and received by persons living outside the county is greater than income earned by county residents from sources outside the county. The average household income for Jefferson county is $29,309.

Gross agricultural sales in Deschutes county totalled $37,097,000 in 1991, approximately 1.5 percent of total farm sales in Oregon. Deschutes county is unusual in that llamas are the largest component of total agricultural sales (approximately 12.5 million, or 34 percent of total sales). Other products, horses, cattle and calves, hays and silage, and field crops are more typical of the region.

Gross agricultural sales in Jefferson county totalled $42,018,000 in 1991, approximately 1.6 percent of the total farm sales in Oregon. Field crops and grass and legume seeds are the leading products of the county. Sales of cattle and calves and dairy products are also significant.

Crooked River Ranch and other private housing subdivisions are located between and adjacent to the two designated rivers. Subdivisions are also being developed on the east rim of the Lower Crooked River. As more people from the subdivisions and from outside the area come to

Table 7 - Average Resident Labor Force by Industry, 1991

Category	Deschutes	Jefferson
Labor Force	44,130	6,860
Unemployed	2,870	470
Percent of Labor Force	6.5%	6.8%
Total Wage and Salary Empl.	33,570	4,600
Total Manufacturing	5,240	1,360
Lumber and Wood Products	3,230	970
Other Manufacturing	2,010	390
Total Non-Manufacturing	28,330	3,240
Construction and Mining	2,400	70
Trans., Comm. and Utilities	1,110	80
Trade	9,080	1,030
Finance, Ins. and Real Est.	2,470	100
Services and Misc.	8,140	900
Government	5,130	1,060

Source: Oregon Employment Division

appreciate the recreation opportunities available it is expected that there will be increased pressure on public and private services. Increased traffic on roads that access the river corridors, increased emergency service needs such as search and rescue, law enforcement, and medical assistance are expected to occur. It is expected that Deschutes county will attract the majority of any additional expenditures made by recreationists in the planning area.

IV. Environmental Consequences

Introduction

This chapter identifies, summarizes, and compares environmental impacts of each alternative on the affected environment - the river corridor resources and land uses described in Chapter 3. In each of the following sections, the impacts to resources and uses that would occur if no additional actions are taken are described under Alternative 1. The impacts of Alternatives 2, 3, 4, and 5 to resources and uses are estimated based on the additional actions that would be taken under each alternative. Not all impacts were quantifiable because of the lack of quantifiable data. An interdisciplinary team of resource specialists used professional judgement to estimate environmental consequences where specific data was lacking.

Impacts to management actions are discussed primarily in the same sequence as in Chapter 3, except impacts to soils and vegetation, and fish and water resources (aquatic resources) were consolidated for ease of analysis. Analysis indicates there would be no significant impact to climate and geology. They will not be considered further.

Where appropriate, tables which summarize the impacts to the alternatives on each resource have been developed. Beneficial impacts are shown by a "+" indicating a positive change from present conditions. Adverse impacts are denoted by a "-" and indicate a decrease or negative change from present conditions. The letters "L, M, or H" are used to indicate the degree or severity of change from present conditions with "L" (low) indicating a relatively small change from present condition and "M" (moderate) denoting an increasingly more significant change from present condition and "H" (high) indicating a dramatic change. Management actions that do not present significant changes and share an even balance between adverse and beneficial impacts are represented by an "NC" (no change).

Many management actions as described by the alternatives and management actions common to all alternatives have been analyzed in the Brothers/LaPine Resource Management Plan and Environmental Impact Statement as well as the Crooked River National Grasslands Land and Resource Management Plan.

Impacts to Scenic Quality

Impacts to scenic quality would generally result from recreation developments and use; upgrading or closing/rehabilitating vehicle routes and trails; prescribed fire, riparian and upland vegetation management; and commercial resource use. These effects are summarized in Table 8 and are described below.

Management actions as described in the alternatives would primarily result in changes in visitor experience.

Alternative 1 (No Action)

Recreation Use

Unregulated camping and day-use activities would continue to result in loss of vegetative ground cover, soil compaction and soil erosion, effecting scenic quality in site specific areas where there are concentrations of visitors. Scenic values at the Steelhead Falls campground and Scout Camp area would be protected by limiting vehicle use.

A number user defined vehicle routes on public lands would continue to effect scenic quality in limited site specific areas. Overall, roads are subordinate to the landscape due to vegetation and rock formations screening them from sight. Unsightly or unnecessary vehicle routes would be closed and rehabilitated, resulting in natural restoration of vegetation which would enhance existing scenic quality in these areas by having fewer roads.
Some limited cross-country vehicle use in popular camping and day use areas along both river corridors would continue to result in new user defined vehicle routes which would affect scenic values in small areas particularly where camping occurs.

Scenic quality would continue to be effected by the network of user developed trails in heavily used areas such as Steelhead Falls, Scout Camp, the junction of Squaw Creek and the Deschutes River and other unnamed trails leading into the Deschutes canyon.

Stabilizing the 0.5 mile Steelhead Falls Trail and developing the 3 mile Squaw Creek Trail would create short-term visual impacts from resource disturbance during construction but would lessen them in the long-term by encouraging visitor use on stabilized trails.

Other Resource Use

Vegetation and wildlife habitat management strategies such as prescribed fire and mosaic juniper thinning would result in short-term inconsistent landscape characteristics such as irregular blackened areas, bare soil areas, dead and/or down trees, and irregular vegetation patterns.

Landscape characteristics within the riparian area would remain unchanged as a result of installing naturally appearing riverbank erosion projects.

Table 8 - Impacts to Scenic Quality

Managing:	Alt1 (NoAction)	Alt 2	Alt 3	Alt 4	Alt 5 (Pref)
Campgrounds	-L	-L	+L	+L	+L
Dispersed Areas	-L	NC	+L	+L	+L
Trails/Use	-L	+L	+L	-L	+L
Roads/Vehicle Use					
Closures	NC	+L	+L	+M	+L
New/Upgrading	-L	NC	+L	+L	+L
Vegetation/Fire	NC	NC	+L	+L	+L
Commercial Use	NC	+L	+L	+M	+L
Overall	-L	NC	+L	+L	+L

\+ Beneficial H High NA Not Applicable
\- Adverse M Medium
NC No Change/Impacts Offset L Low

Commercial Use

Authorizing additional utility line right-of-ways that cross the river in existing right-of-ways would have no direct adverse impact on outstandingly remarkable scenic values.

Scenic quality is not expected to be adversely affected if new material sites are approved under this alternative, because development would be required to remain consistent with long-term protection of other resource values including scenic quality.

Not allowing any surface occupancy for oil, gas, or geothermal exploration and development in visually sensitive areas visible from the Middle Deschutes and Lower Crooked rivers would also continue to maintain existing scenic quality.

Existing management guidelines also help maintain existing scenic quality by restricting energy exploration activities to existing roads to the fullest extent possible and ensuring that evidence of reclamation of any surface disturbing activities is substantially unnoticeable.

Scenic quality is not expected to be impacted as a result of BLM public lands being open for mineral entry, due to low mineral potential and low probability of exploration and development within the river corridors. Prospecting permits and leases on National Grasslands lands would not be allowed within 1/4 mile of the Middle Deschutes and Lower Crooked Rivers, therefore scenic values on these lands would remain unaffected.

Livestock grazing on public land plateaus would not effect scenic quality in the long-term, but very limited short-term impacts may occur in small, localized riparian areas, until vegetative regrowth occurs.

Alternative 2

Recreation Use

Developing and designating campsites with pit toilets, designated vehicle routes, trailheads and parking areas at the Steelhead Falls, Scout Camp and Lower Bridge campgrounds would change the scenic quality of these areas by making them more developed and noticeable in their viewsheds. Confining use and rehabilitating previously disturbed areas would lessen the loss of vegetative ground cover, soil compaction and soil erosion which effects scenic quality in these site specific areas. Short-term visual impacts would occur as a result of resource disturbance during construction.

Trailhead construction at proposed and existing trails would have little impact to scenic values due to their limited size and development requirements. Most of these areas have soil and vegetation disturbance from past vehicle use. Formalizing the areas as trailheads would make them appear neater and would limit further resource degradation.

Just as described in Alternative 1, a number user defined vehicle routes on public lands would continue to effect scenic quality in limited site specific areas. Overall, these roads would remain subordinate to the landscape due to vegetation and rock formations screening them from sight. Approximately 3 miles of vehicle routes would be closed and rehabilitated, resulting in natural restoration of vegetation which would enhance existing scenic quality in these areas by having fewer roads. Additionally, providing and improving 14 miles of roads would effect scenic values by having them more noticeable in their immediate vicinity. This would be partially compensated by eliminating unsightly erosion from poor quality routes.

Impacts to scenery from stabilizing the Steelhead Falls and Squaw Creek Trails would be the same as in Alternative 1. Reconstructing 2.25 miles of the CCC and Hollywood Trails would not result in any noticeable impacts to scenic values except short-term visual impacts from resource disturbance during reconstruction.

Under this alternative, 11.25 miles of new trails would be constructed. These trails would largely be in the canyon bottoms and not easily seen for vistas along the canyon rims. The connecting trail between Steelhead Falls and the CCC Trail would likely require some rock blasting. Some short and long-term visual scars are expected to result from blasting and development of portions of this trail to meet trail standard requirements.

Trails developed under this alternative would be more visible in their immediate surroundings than user developed paths but the more developed trails would encourage visitors in the long-term to stay on the trail, reducing new user-developed trails. Approximately 7.5 miles of old user developed trails would be rehabilitated resulting in a more natural setting off the main trails.

Scenic quality would be enhanced on private lands by acquiring easements, acquisitions and developing cooperative agreements with willing adjacent landowners. Off-trail use would be discouraged in these areas and casual use trails would be re-routed and rehabilitated again resulting in a more natural setting.

Other Resource Use

Impacts to scenic quality resulting from fire, vegetation, wildlife and riparian habitat management actions would be the same as Alternative 1.

Potential construction of fish enhancement or passage structures or other instream modifications would be done using natural appearing materials and design which would blend into the surrounding landscape.

Commercial Use

Impacts to scenic quality from utility corridors and rights-of-ways would be similar to Alternative 1. Scenic values on lands outside of the viewsheds from the rivers could be slightly impacted from
approval of rights-of-ways on a case-by-case basis.

Although major impacts are not expected from authorizing new saleable mineral sites, scenic values have added protection under this alternative since this use would not be authorized on Federal lands within the Middle Deschutes and Lower Crooked River boundaries.

Scenic quality may be enhanced by purchasing private surface and sub-surface mineral rights from willing sellers to minimize potential impacts to scenic quality resulting from commercial use on private lands within the corridor.

Impacts to scenic quality from both locatable and leasable mineral activity on BLM public lands would be the same as in Alternative 1. Impacts to scenic quality from mineral activity on National Grasslands would be the same as Alternative 1.

Existing scenic quality would be maintained by using livestock enclosures if necessary to protect riparian areas from degradation.

Alternative 3

Recreation Use

Impacts to scenic values from developing and designating semi-primitive campsites with pit toilets, designated vehicle routes, trailheads and parking areas at the Steelhead Falls and Scout Camp campgrounds would be the similar to Alternative 2 but with a lesser level of development.

Developing trailheads at Lower Bridge, Scout Camp, Geneva Point and the CCC Trails would impact scenic values as described in Alternative 2.

Fewer user defined vehicle routes on public lands would impact scenic quality in limited site specific areas. Overall, roads would subordinate to the landscape due to vegetation and rock formations screening them from sight. Approximately 4 miles of vehicle routes would be closed and rehabilitated, resulting in natural restoration of vegetation which would enhance existing scenic quality in these areas by having fewer roads.

Impacts to scenery from stabilizing the Steelhead Falls Trail would be the same as in Alternative 1. Impacts from reconstructing 2.25 miles of the CCC and Hollywood Trails and developing the 3 mile Lower Bridge Trail would be the same as in Alternative 2.

Impacts to scenic quality from easement acquisitions, cooperative agreements, etc would be the same as Alternative 2.

Other Resource Use

Impacts to scenic quality resulting from fire, vegetation, wildlife and riparian habitat management actions would be similar to Alternative 1, but with more emphasis on maintaining a natural appearing environment. Requiring natural bank stabilization methods would continue to maintain the existing scenic quality of the canyon areas, without drawing visitor attention to manmade features that could be visually intrusive.

Visual impacts as a result of fisheries projects would be the same as Alternative 2.

Construction of gap fencing and upland water sources for better livestock and wildlife distribution would slightly reduce scenic quality in localized areas.

Commercial Use

Impacts to scenic quality from issuance of right-of-ways and utility corridor management would be the same as Alternative 2.

Impacts to scenic quality from saleable mineral activity would be same as Alternative 2.

Extending the no surface occupancy for leasable minerals and pursuing a withdrawal of BLM public lands seen from the Middle Deschutes and Lower Crooked Rivers from locatable minerals would result in strong protection of scenic values. Regardless of the withdrawal, however, scenic values are not expected to be impacted due to low energy and mineral potential.

Impacts to scenic quality from mineral activity on National Grasslands would be the same as Alternative 1.

Over the long-term, scenic quality would be slightly enhanced by limiting livestock to the upland plateau areas where scenic quality is generally less than in the river canyon areas.

Alternative 4

Recreation Use

Scenic values would be enhanced at Steelhead Falls by creating walk-in campsites and rehabilitating much of the internal road network. Constructing a small walk-in campground at Scout Camp, would create only minor impacts to scenic values due to the low level of development and confining use to a smaller restricted area.

There would be very limited visual impacts by keeping trailheads informal. Users are not expected to impact larger areas than already exist.

Impacts to scenic values from motorized vehicle use would be the same as Alternative 3, except closing 9 miles of road would provide added protection of scenic values.

Keeping all trails user developed with occasional maintenance would have impacts very similar to Alternative 1. Over the long-term, scenic quality is expected to decrease slightly in the vicinity of popular use areas such as Steelhead Falls as new user-developed trails are created.

Other Resource Use

Impacts to scenic quality resulting from fire, vegetation, wildlife, and riparian management actions would be similar to Alternative 3.

Visual impacts as a result of fisheries projects would be the same as Alternative 2.

Commercial Use

Scenic quality would receive maximum protection under this alternative since no new rights-of-way or utility corridors would be allowed on Federal lands within the river corridors.

Impacts to scenic quality from saleable mineral activity sites would be the same as Alternative 2.

Pursuing withdrawals for both locatable and leasable minerals within the river corridor boundaries would result in maximum protection of scenic values. Regardless of the withdrawal, however, scenic values are not expected to be impacted due to low energy and mineral potential.

Impacts to scenic quality from mineral activity on National Grasslands would be the same as Alternative 1.

Over the long term, scenic quality would be slightly enhanced by eliminating livestock grazing from within the river corridors.

Alternative 5 (Draft Preferred)

Recreation Use

Developing semi-primitive camping areas at Steelhead Falls and possibly Scout Camp, constructing semi-primitive trails at Scout Camp, Squaw Creek, and reconstructing the CCC and Hollywood road semi-primitive trails would effect scenic quality in the same manner as Alternative 3.

Just as described in Alternative 1, a number user defined vehicle routes on public lands would continue to effect scenic quality in limited site specific areas. Overall, these roads would remain subordinate to the landscape due to vegetation and rock formations screening them from sight. Approximately 4 miles of vehicle routes would be closed and rehabilitated, resulting in natural restoration of vegetation which would enhance existing scenic

quality in these areas by having fewer roads. Additionally, providing and upgrading 11.3 miles of roads would effect scenic values by having them more noticeable in their immediate vicinity. This would be partially compensated by eliminating unsightly erosion from poor quality routes.

Impacts to scenery from stabilizing the Steelhead Falls Trail and constructing the Squaw Creek Trail would be the same as in Alternative 1. Impacts from reconstructing the CCC and Hollywood Trails and developing the Scout Camp Trail would be the same as in Alternative 2.

Developing trailheads at all proposed trails would impact scenic values as described in Alternative 2.

Benefits to scenic quality by acquiring easements, acquisitions and developing cooperative agreements with adjacent private landowners would be the same as Alternative 2.

Other Resource Use

The effects of fire, vegetation, wildlife and riparian management actions on scenic quality would be the same as Alternative 3.

Visual impacts as a result of fisheries projects would be the same as Alternative 2.

Management of vegetation and wildlife habitat would result in the same impacts to scenic quality as discussed in Alternative 1.

Commercial Use

Impacts to scenic quality from issuance of right-of-ways and utility corridor management would be the same as Alternative 2.

Impacts to scenic quality from saleable mineral activity would be the same as Alternative 2.

lmpacts to scenic quality from leasable mineral activity would be the same as Alternative 1.

Impacts to scenic quality from locatable mineral activities on BLM public lands would be the same as Alternative 1.

Impacts to scenic quality from mineral activity on National Grasslands would be the same as Alternative 1.

lmpacts to scenic quality from livestock grazing would be the same as Alternative 3.

Impacts to Recreation and Access

Recreation opportunities are made up of the physical and biological environment (including the character of the landscape, level and type of development present, and fish and wildlife) the social environment (the amount and type of people who use the recreation setting, what activities they do, and what type of experiences they have), and the managerial environment (the level, type and location of public access, facilities and improvements, interpretation and education efforts, and on and off-site regulations). Changes in any of these characteristics could change the type of recreation use or recreation experience occurring in the river corridor. These effects are summarized in Table 9 and are described below.

Actions that have the greatest impact on recreation users would be those that encourage or limit use levels according to the level of trail development within the canyons and the amount of facility development and vehicle access on adjacent plateaus.

Figure 9 - Impacts to Recreation and Access

Managing:	Alt1 (NoAction)	Alt 2	Alt 3	Alt 4	Alt 5 (Pref)
Campgrounds	-L	+M	+L	NC	NC
Dispersed Areas	NC	+L	+L	-L	NC
Trails/Use	NC	+M	+L	NC	+L
Roads/Vehicle Use	-L	-L	+L	+L	+L
Closures	NC	NC	-L	-M	-L
New/Upgrading	-L	-L	+L	+L	+L
Recreation Use	NC	+L	+L	+M	+L
Quantity of Use	NC	-L	NC	NC	NC
Quality of Exper.	NC	-L	+L	NC	+L
Fish Habitat	NC	+L	+L	+L	+L
Vegetation	NC	NC	NC	+L	NC
Overall	NC	+L	+L	NC	+L

\+ Beneficial H High NA Not Applicable
\- Adverse M Medium
NC No Change/Impacts Offset L Low

Alternative 1 (No Action)

Recreation Opportunities

Managing the Middle Deschutes and Lower Crooked River canyon areas for semi-primitive non-motorized recreation opportunities would continue to provide users with limited social interactions throughout most of the canyons. Managing the upland plateaus for semi-primitive motorized and roaded natural recreation opportunities would provide occasional contacts with other users in these roaded settings.

Motorized Access

Existing back-country driving, sightseeing and other semi-primitive motorized recreation activities would not be affected under this alternative. With the exception of the Steelhead Falls Wilderness Study Area where vehicle use is limited to existing vehicle routes, the remainder of the BLM lands are designated as open to off road vehicle use. Year around motorized use is encouraged on the approximately 13 miles of existing vehicle routes on public lands within the river corridors. Existing seasonal closures on 4 miles of road within the National Grassland lands would continue.

Allowing unrestricted motorized access on most of the public lands within the corridor would result in short and long-term impacts to recreation. User experience would benefit in the short-term as a result of ease of access for recreation activities such as exploration, hunting and fishing. Although users would have unlimited access, the quality of their experience would decline in the long-term for some users because of the increased number of users and vehicle routes. Limited road maintenance on vehicle routes could limit vehicle use on some roads to only users with high clearance vehicles.

Although nothing is currently planned, motorized recreation opportunities could be enhanced by providing additional public access to parcels of public land through easements, acquisition or agreements with willing landowners. The affects of closing some vehicle routes for rehabilitation would slightly reduce the amount of roaded access but other existing routes would generally provide adequate access to most public lands.

Non-Motorized Access

High quality year-around recreation opportunities such as hiking, fishing, camping and horseback riding would continue be available. Limited public access and rugged terrain restrict use numbers in the river corridors and recreationists have few restrictions placed upon them. Dispersed camping opportunities would not be available during the winter within the 1,500 acre Metolius Deer Winter Range on the National Grasslands.

Stabilizing the Steelhead Falls Trail would enhance the safety factor for visitors and would make access slightly easier. Increased visitor use is not anticipated as a result of trail stabilization. Developing the Squaw Creek Trail would provide easier access and increased visitation into remote areas of the Middle Deschutes and Squaw Creek Canyons. Long-term increases in visitor use resulting from the Squaw Creek trail development would reduce the feeling of isolation for visitors seeking a more primitive recreation experience in this area.

Horseback riding and mountain bike use within the river corridor areas is expected to slightly increase in the future. Although users would have unlimited access, the quality of their experience would decline in the long-term because of user conflicts and physical changes on and adjacent to the trails.

Opportunities for wild trout fishing would be available, but the quality of these opportunities would be reduced over time, due to increased competition for fishing holes particularly in those areas with relatively easy access. Recreation opportunities for kayaking and rafting would continue to be limited to experts. Erratic and low water flows make these recreation opportunities unpredictable limiting most use to high spring flows during normal runoff years.

Recreation Development

The quality of camping and day-use activities would be reduced at the Steelhead Falls camping area, due to unregulated vehicle use within the campground.

Development of the Steelhead Falls and Geneva Overlook trailheads would provide public education on resource values and enhance user safety by informing visitors of potential hazards within the area.

A limited public information and education program effort would help reduce physical impacts caused by users and would help reduce conflicts between recreation users.

Recreation-Related Activities

Target practice and other shooting activities would occur in the river corridors. These activities would affect visitor safety especially in the canyon areas within the river corridors. The quality of recreation experience for users who do not like the sounds of shooting would continue to decline. These conflicts are expected to increase as visitor use increases.

Current seasonal fire restrictions would continue to reduce potential wildfire, while allowing visitors to build campfires at desired campsites. Allowing firewood gathering for on-site

use would eventually deplete firewood locally and make gathering difficult for future users.

Vegetation and wildlife habitat management strategies such as prescribed fire and mosaic juniper thinning would result in short-term changes in recreation setting by changing landscape characteristics. These changes could indirectly effect use patterns for activities such as hunting, hiking, and sightseeing.

Commercial Recreation Use

Continuing to allow commercial use in the corridor would result in the provision of long-term services to those seeking the use of professionals to enhance their personal recreation experience. If guided use increases significantly, some conflicts may arise with the non-guided public. Boating opportunities, commercial or otherwise, are limited by physical restrictions such as unpredictable water flows, rugged terrain, limited public put-in/take-out locations, boulder fields on both rivers and waterfalls on the Middle Deschutes. Therefore, any increase in use is expected to be minimal.

Alternative 2

Recreation Opportunities

Managing the Middle Deschutes and Lower Crooked River canyon areas for semi-primitive non-motorized recreation opportunities would provide users with more social interactions throughout most of the canyons due to slightly increased access. Managing the upland plateaus for roaded natural recreation opportunities would provide periodic contacts with other users in these more developed roaded settings.

Motorized Access

Impacts to recreationists from motorized use management would be similar to Alternative 1, except that users would be encouraged to stay on approximately 14 miles of vehicle routes on public lands within the river corridors. Approximately 3 miles of primitive vehicle routes would be closed, precluding use historically available on these routes.

Upgrading and maintaining 9 miles of roads regularly would enhance motorized recreation use and increase recreation opportunities by providing easier and safer public access, particularly for passenger car traffic. Motorized recreation opportunities would also be enhanced through easements, acquisition and agreements with willing landowners to provide additional legal public access into heavily used public lands along the plateaus within the river corridors.

Non-Motorized Access

Recreation opportunities such as hiking, mountain biking, horseback riding and other recreation activities would be more available than in Alternative 1 as a result of developing 11.25 miles of trails if easements are acquired, and converting some existing vehicle routes to exclusive non-motorized recreation uses. Developing and/or reconstructing these trails into areas previously difficult or inaccessible to visitor use would increase use and expand recreation opportunities within the Middle Deschutes and Lower Crooked river canyons and plateaus.

Non-motorized recreation opportunities would be enhanced through easements, acquisition and agreements with willing landowners to provide additional legal public access in order to develop some trails within the river corridors.

The quality of recreation opportunities in the long-term may change in popular trail areas such as Steelhead Falls, Lower Bridge, Kidder and the CCC Trail. Developed trails in the long-term would attract more visitors to the same

Many dispersed use areas on the plateaus, experience uncontrolled resource degradation and vandalism

location, resulting in less isolation for visitors seeking more primitive recreation opportunities. Some of these users may be displaced by those recreationists who enjoy a more social setting.
Re-routing and/or rehabilitating trails with heavy degradation is not expected to reduce or significantly change recreation opportunities.

Encouraging horse and mountain bike users to stay on existing roads and trails would not adversely affect recreation opportunities for these visitors, due to the existing network of trails presently available for these activities.

Fishing opportunities under this alternative would experience the most change. Providing fish passage around Opal Springs diversion dam on the Crooked River would introduce fish species such as Kokanee, steelhead, squawfish, and Bull Trout from Lake Billy Chinook. The wild trout population on the Middle Deschutes River would be supplemented with hatchery catchables and fingerlings. The quality of fishing for wild trout could be diminished on both river segments as a result of these management actions. However, increased numbers of fish would be available for anglers.

Impacts to boaters would be the same as Alternative 1.

Recreation Development

Developing the Steelhead Falls, Scout Camp and Lower Bridge camping areas would provide for increased opportunities for camping in less primitive settings. Campers who enjoy the

primitive settings for camping would be displaced to less developed and less crowded areas. Developing trailheads with interpretative signs at all proposed trails would enhance public safety and awareness of resource values through interpretative signing. Developing designated trailhead parking would also help recreationists by more easily accommodating vehicles at the trailheads.

Scenic overlooks on the Crooked River Ranch and construction of an interpretative display at the Ogden Scenic Wayside would enhance visual access for many visitors unwilling or unable to hike into these river canyons.

Recreation-Related Activities

Impacts from firearm use would be the same as Alternative 1.

Implementing a fire closure between June 1 and October 15 would impact recreation users who desire a campfire during traditional high use season months in dispersed sites. The disallowance of fires may displace some users to areas outside of the river corridors. Users desiring a fire would be allowed to have them in developed fire grates at developed campsites. The fire closure would lessen the risk of wildfire and decrease the amount of litter associated with rock fire rings.

Impacts to recreationists from firewood collection would be the same as Alternative 1, except more wood would be available in the off season as a result of implementing fire restrictions from June 1 through October 15.

Vegetation and wildlife habitat management strategies such as prescribed fire and mosaic juniper thinning would result in the same impacts as discussed in Alternative 1.

Commercial Recreation Use

Impacts to recreationists from commercial recreation use would be the same as Alternative 1.

Alternative 3

Recreation Opportunities

Managing the lands between the rims of the Middle Deschutes and Lower Crooked Rivers for semi-primitive non-motorized recreation opportunities would allow for slightly more visitor interaction than in Alternative 1. Managing the plateaus for semi-primitive motorized recreation opportunities would result in slightly improved opportunities to experience isolation in these areas as a result of a less developed roaded setting.

Motorized Access

Motorized recreation opportunities would be reduced under this alternative. Designating the public lands as limited to designated roads would provide motorized access on approximately 9 miles of vehicle routes. About 4 miles of existing vehicle routes not needed to access designated recreation sites and trailheads would be closed and rehabilitated. Approximately 9 miles of vehicle routes would be graveled and maintained regularly, providing increased recreation opportunities such as camping and sightseeing for visitors with passenger vehicles.

Non-Motorized Access

Under this alternative, the quality of non-motorized recreation opportunities would be enhanced. Reconstructing the Steelhead Falls, CCC, Lower Bridge and Hollywood Trails would provide additional recreation opportunities into areas historically visited by a limited

number of visitors as a result of rugged terrain and lack of easy access.

Leaving some of the more difficult, user developed trails at places such as Scout Camp, and Geneva Point undeveloped would allow users preferring less crowded areas a place to hike and fish with less visitor interaction. The semi-primitive experience would be enhanced in areas not having developed trails and by encouraging visitors to find their own way in exploring the river corridors.
Re-routing and/or rehabilitating unnecessary trail networking is not expected to reduce or significantly change recreation opportunities. Cross-country public access would still be available for those visitors seeking a more isolated environment.

Limiting horse and mountain bike users to existing roads and trails would not adversely affect recreation opportunities for these visitors. Existing user defined as well as developed trails would remain open for these uses.

Management of fish habitat would result in the similar impacts to anglers as discussed in Alternative 2. Opportunities for catching native fish on both rivers would be enhanced.

Impacts to boaters would be the same as Alternative 1.

Recreation Development

Impacts to recreationists from the development or increased development of campgrounds at Scout Camp and Steelhead Falls would be similar to Alternative 2. Impacts from the development of trailheads at Lower Bridge, Scout Camp, Geneva Point, and the CCC trail would also be similar to Alternative 2.

Impacts to recreationists utilizing scenic overlooks and displays would be the same as Alternative 2.

Recreation-Related Activities

Limiting the discharge of firearms to big game, upland game and waterfowl seasons would effect those visitors who enjoy casual shooting on public lands throughout the year. Recreationists wanting to shoot outside of these established seasons would have to go outside of the river corridors. Conflicts between shooters and non-shooters would be reduced especially during the summer months when visitor use is the highest. Public safety would also be increased by limiting shooting to specific hunting seasons.

Impacts to recreationists from campfire limitations would be similar to Alternative 2, except no fires would be allowed from June 1 to October 15. Some visitors who are no longer allowed to build campfires may be displaced to other areas with less restrictive fire regulations.

During the open fire season, visitors would have to bring their own firewood. Those users who plan ahead and bring their wood would be able to have fires. Users who forgot to bring wood would be unable to collect it and therefore unable to have a fire.

Vegetation and wildlife habitat management strategies such as prescribed fire and mosaic juniper thinning would result in the same impacts as discussed in Alternative 1.

Commercial Recreation Use

Impacts to recreation from commercial recreation use would be the similar to Alternative 1, except that commercial activities would be restricted to Segment 4 on the Middle Deschutes River. Currently, six outfitters on the Lower Crooked and one on the Middle Deschutes have valid permits. Although these outfitters are not currently providing commercial trips in these areas, their permits would have to be revised to exclude those areas. Due

to limited commercial interest in these areas impacts are not anticipated, although future opportunities would be foregone.

Alternative 4

Recreation Opportunities

Managing the lands between the rims of the Middle Deschutes and Lower Crooked Rivers for semi-primitive non-motorized recreation opportunities would allow for visitor interaction similar to that discussed in Alternative 1. Managing the plateaus for semi-primitive motorized recreation opportunities would result in improved opportunities to experience isolation in these areas as a result of reduced motorized vehicle access.

Motorized Access

Motorized recreation opportunities would be adversely impacted as a result of limiting motorized vehicle use to 4 miles of designated roads on public lands within the river corridors. Approximately 9 miles of existing vehicle routes on public lands would be closed and rehabilitated. The remaining 4 miles of public land motorized access road would be graveled and maintained regularly providing easy access to high use river corridor access points.

Non-Motorized Access

Impacts to recreationists from the management of non-motorized recreation would be similar to Alternative 1, except all trails within the river corridors would remain user developed.

Re-routing and/or rehabilitating unnecessary trail networking is not expected to reduce or significantly change recreation opportunities. Cross-country public access would still be available for those visitors seeking a more isolated environment.

Limiting mountain bikes to designated roads would reduce potential user on trails since only hikers and horseback riders would be allowed on trails. Some conflicts could still result between horseback riders and hikers on popular user trails.

Management actions in this alternative would support efforts to restore pre-dam fisheries on the Deschutes and Crooked Rivers. Although doing so is outside the scope of this management plan, restoration of pre-dam fisheries would give anglers opportunities to fish for species no longer there such as anadromous runs of Coho and Chinook salmon.
Impacts to boaters would be the same as Alternative 1.

Recreation Development

Establishing walk-in campgrounds with only one access route at Steelhead Falls and Scout Camp would effect those visitors who had the freedom to drive right to their favorite camping area. Users desiring to park their vehicles within their campsite would be displaced to other areas in or outside of the river corridors. Those visitors preferring a more primitive camping environment without vehicle use immediately adjacent to campsites would have less competition for sites and a less developed environment to camp in.

Trailheads would remain user developed with essentially the same impacts as Alternative 1.

Opportunities for scenic overlooks would remain limited to those managed by the Crooked River Ranch.

Recreation-Related Activities

Prohibiting the discharge of firearms on a year-round basis would displace those visitors who enjoy hunting and shooting on public lands

throughout the year within the river corridors. Approximately 6,110 acres would no longer be available for the public to hunt on. Conflicts between shooters and non-shooters would be reduced especially during the summer months when visitor use is the highest. Public safety would also be increased by eliminating shooting. Users who participate in trapping would be displaced to another area for this activity.

Recreationists would be impacted by no longer being able to have campfires on public lands within the river corridors. Users who value campfires as part of the recreation experience could be displaced to areas with less strict fire regulations.

Vegetation and wildlife habitat management strategies such as prescribed fire and allowing introduction of only native plant and animal species would result in enhanced recreation values by retaining visual consistency as well as native vegetation and wildlife populations.

Commercial Recreation Use

Excluding commercial use within the corridor would impact seven commercial businesses which currently have permits and by eliminating some potential economic income. Recreation users desiring guide services would lose the opportunity to recreate on these segments of the rivers. Due to limited commercial interest in these areas, impacts are not anticipated although future opportunities would be foregone.

Alternative 5 (Draft Preferred)

Recreation Opportunities

Managing the lands between the rims of the Middle Deschutes and Lower Crooked Rivers for semi-primitive non-motorized recreation opportunities would allow for slightly more visitor interaction than in Alternative 1. Managing the plateaus for semi-primitive motorized recreation opportunities would result in slightly improved opportunities to experience isolation as a result of a less developed roaded setting.

Motorized Access

Impacts to recreationists from management of motorized recreation would be similar to Alternative 3. Designating public lands as limited to designated roads would provide motorized access on approximately 11.3 miles of vehicle routes within the river corridors. About 4 miles of existing vehicle routes not needed to access designated recreation sites and trailheads would be closed and rehabilitated. Approximately 9 miles of vehicle routes would be graveled and maintained regularly, providing increased recreation opportunities such as camping and sightseeing for visitors with passenger vehicles.

Non-Motorized Access

Impacts to recreationists from management of non-motorized recreation activities would be similar to Alternative 3.

Management of fish habitat would result in the similar impacts to anglers as discussed in Alternative 2. Opportunities for catching native fish on both rivers would be enhanced.

Encouraging mountain bike and horse use to occur on designated roads and designated or user developed trails in the plateaus would provide added protection of easily accessible scenic resources, thus contributing to a positive recreation experience in these areas. Excluding mountain bike use from within the canyon areas would eliminate conflicts with hikers and horseback riders in the more popular use areas below the rims. Limiting horse use to desig-

nated trails in riparian areas and encouraging horse use to occur on developed and user developed trails elsewhere within the canyon areas would result in added protection of scenic and riparian values. This would enhance the likelihood of experiencing primitive recreation opportunities in the canyon areas.

Impacts to boaters would be the same as Alternative 1.

Recreation Development

Impacts to recreationists as a result of campground management would be similar to Alternative 1, except vehicle access to these sites would be limited to one road. Developing trailheads at Lower Bridge and Geneva Point and installing interpretative signs emphasizing minimum impact use of public lands at key access points within both river corridors would result in impacts similar to Alternative 3.

Recreation-Related Activities

Impacts to recreationists from firearm management would be the same as Alternative 3.

Impacts to recreationists from fire restrictions would be the same as Alternative 3. Collection of firewood for on-site campfire during open fire season would continue to provide recreationists the ability to have fires in remote areas.

Vegetation and wildlife habitat management strategies such as prescribed fire and mosaic juniper thinning would result in the same impacts as discussed in Alternative 1.

Commercial Recreation Use

Impacts to recreationists from management of commercial recreation would be the same as Alternative 1.

Impacts to Aquatic and Riparian Resources

Impacts on aquatic and riparian resources would generally result from water quality and quantity; visitor use; trail and facility development; fish, vegetation, and livestock management; and commercial resource use. They are summarized in Table 10 and are discussed below.

Alternative I (No Action)

Continuing fish habitat restoration strategies, conducting habitat surveys, and managing the Middle Deschutes and Lower Crooked rivers as "wild trout" fisheries would benefit aquatic resources by enhancing biodiversity and ecological stability of both rivers.

Installing natural vegetation and/or naturally appearing stream bank erosion control structures and diversions on a project by project basis would improve aquatic resources and enhance fish populations over the long-term.

Management of vegetative diversity and proper functioning riparian areas would benefit fish communities as a result of increased overhead cover and food sources, increased shade, reduced insulation rate, and limited rate of increasing water temperatures.

Limiting facility development in riparian areas would help maintain existing riparian habitat by encouraging visitor use away from these areas.

Use of chemicals on noxious weed in upland areas could result in an unquantifiable rate of mortality to aquatic life and the creation of a short-term zone of biological degradation. There would be a decrease in aquatic productivity and biodiversity.

Table 10 - Impacts to Aquatic and Riparian Resources

Managing:	Alt1 (NoAction)	Alt 2	Alt 3	Alt 4	Alt 5 (Pref)
Trails/Use	-L	+L	+L	+L	+L
Fish Habitat	NC	+L	+L	+L	+L
Riparian Vegetation	NC	+L	+L	+L	+L
Upland Vegetation	-L	-L	+L	+L	+L
Livestock	-L	-L	+L	+L	+L
Commercial Use	-L	+L	+L	+L	+L
Overall	-L	+L	+L	+L	+L

\+ Beneficial H High NA Not Applicable
\- Adverse M Medium
NC No Change/Impacts Offset L Low

Other than vegetative loss and soil erosion slightly impacting aquatic resources in localized areas, livestock grazing in riparian areas on BLM managed public lands would continue as long as ecological condition could be maintained to meet full vegetative potential. Since livestock grazing is not allowed in riparian areas on National Grasslands, related aquatic and riparian resources would not be impacted in these areas.

By allowing unrestricted non-motorized access within the riparian without re-routing and rehabilitating user developed trails there would be a continued potential for the loss of vegetation with an associated increase in soil erosion. These impacts would result in minimal levels of localized sedimentation which could adversely impact water quality.

Increases in turbidity and sedimentation could result in impacts to water quality if new surface mineral extraction sites were located in canyon areas where erosional run-off is likely.

For additional water quantity and quality related analysis refer to the Aquatic and Riparian section within the Management Actions Common to All Alternatives environmental analysis in this chapter.

Alternative 2

Installation of fish enhancement structures or instream modifications within the high water channel would result in long-term beneficial effects on fish and other aquatic resources. Short-term impacts on water quality would result from the disturbance of river bottom material during construction. Fish would return after temporarily being displaced.

Pursuing fish passage on the Middle Deschutes and Lower Crooked Rivers, as well as fish passage at the Opal Springs diversion dam, would offer extended fish migration out of Lake Billy Chinook and increase the likelihood of re-establishing historic anadramous fish populations in the future. Offering fish passage

on both rivers could impact wild trout populations through hybridization and competition for food and habitat. Developing fish passage at Opal Springs diversion dam would change the current fish diversity make-up of the Lower Crooked River.

Supplementing resident fish stocks with hatchery catchables and fingerlings on the Middle Deschutes would adversely effect wild trout populations as a result of hybridization and increased competition for food and fish habitat.

Encouraging natural bank stabilization methods and planting native riparian vegetation may improve riparian and aquatic resources as a result of enhanced natural vegetative integrity within these areas. Fish communities would benefit in the long-term as a result of increased overhead cover and food sources, increased shade, reduced insulation rate, and limited rate of increasing water temperatures.

Introduction of non-native plant species is not expected to have an effect on riparian and aquatic habitat because it would only be allowed if determined that no adverse effects would occur to other resource values.

Re-routing and rehabilitating existing casual use trails in the riparian areas within the corridors would result in beneficial effects on water quality and riparian resources by reducing sediment load and encouraging visitors to remain on trails so that riparian vegetation degradation is limited. Construction of new

Typical soil erosion and vegetative loss created by undefined use

trails is expected to result in these same impacts. Short-term impacts would result from initial construction and rehabilitation.

Increased visitor use in riparian areas may adversely impact populations of *Artemisia ludoviciana ssp. estesii* (Estes Wormwood), which is classified as a sensitive riparian plant species. Trails would be located or re-routed around locations where this sensitive species is located. Other mitigative measures would be taken as determined necessary.

Impacts of chemical use on noxious weeds in upland areas on aquatic life would be the same as discussed in Alternative 1.

Impacts of livestock grazing would be the same as discussed in Alternative 1.

Management of commercial resources within the river corridors would benefit aquatic resources by reducing the risk of increased turbidity and sedimentation created by surface mineral extraction activities.

For additional water quantity and quality related analysis refer to the Aquatic and Riparian section within the Management Actions Common to All Alternatives environmental analysis in this chapter.

Alternative 3

Installation of fish enhancement structures or instream modifications within the high water channel would result in the same impacts to aquatic resources as discussed in Alternative 2.

Pursuing fish passage on the Middle Deschutes and Lower Crooked Rivers, as well as fish passage at the Opal Springs diversion dam, would result in the same impacts as discussed in Alternative 2.

Wild trout growth, survival and reproduction would be improved by managing both rivers to enhance native fish communities.

Requiring natural bank stabilization methods, planting native riparian vegetation, and primarily using mechanical methods of vegetation management would result in the same impacts as discussed in Alternative 2. Planting only native riparian plant species would help ensure protection of natural vegetative integrity in riparian areas along the Middle Deschutes and Lower Crooked Rivers.

Re-routing and rehabilitating existing casual use trails and constructing new trails in the riparian areas within the corridors would result in the same impacts as discussed in Alternative 2.

Just as discussed in Alternative 2, trails would be located or re-routed around locations where Estes Wormwood exists reducing any impacts which may occur to this sensitive riparian plant species.

Limiting chemical use on noxious weeds to a "last case scenario" in upland areas would result in better protection of aquatic resources. Aquatic life would be less impacted by short-term biological degradation.

Excluding livestock grazing from within riparian areas on BLM lands would result in beneficial impacts to aquatic and riparian resources by allowing the natural integrity of these areas to flourish without impacts created by livestock. Allowing livestock grazing only when no other vegetation strategy is appropriate is not expected to adversely impact these resources. Impacts from livestock grazing on National Grasslands would be the same as discussed in Alternative 1.

Management of commercial resources within the river corridors would benefit aquatic resources by eliminating the risk of increased turbidity and sedimentation created by surface mineral extraction activities close to the river.

For additional water quantity and quality related analysis refer to the Aquatic and Riparian section within the Management Actions Common to All Alternatives environmental analysis in this chapter.

Alternative 4

Installation of fish enhancement structures or instream modifications within the high water channel would result in the same impacts to aquatic resources as discussed in Alternative 2.

Pursuing fish passage on the Middle Deschutes and Lower Crooked Rivers, as well as fish passage at the Opal Springs diversion dam, would result in the same impacts as discussed in Alternative 2.

Managing both rivers to enhance native, historic fish communities would improve wild trout growth, survival, and reproduction.

Requiring natural bank stabilization methods, planting native riparian vegetation, and primarily using mechanical methods of vegetation management would result in the same impacts as discussed in Alternative 3.

Re-routing and rehabilitating existing casual use trails and constructing new trails in the riparian areas within the corridors would result in the same impacts as discussed in Alternative 2.

Impacts to Estes Wormwood from increased recreation use would be the same as discussed in Alternative 2.

Discontinuing use of chemicals in the upland areas would not create any impacts on aquatic resources.

Excluding livestock grazing from within the river corridors on both BLM and National Grasslands managed lands would result in the same impacts to aquatic and riparian resources as discussed in Alternative 3.

Impacts of managing commercial resources within the river corridors would result in the same impacts as discussed in Alternative 3.

For additional water quantity and quality related analysis refer to the Aquatic and Riparian section within the Management Actions Common to All Alternatives environmental analysis in this chapter.

Alternative 5 (Draft Preferred)

Installation of fish enhancement structures or instream modifications within the high water channel would result in the same impacts to aquatic resources as discussed in Alternative 2.

Pursuing fish passage on the Middle Deschutes and Lower Crooked Rivers, as well as fish passage at the Opal Springs diversion dam, would result in the same impacts as discussed in Alternative 2.

Managing both rivers to enhance native fish communities would result in the same impacts to aquatic resources as discussed in Alternative 3.

Requiring natural bank stabilization methods and primarily using mechanical methods of vegetation management would result in the same impacts as discussed in Alternative 3. Introduction of non-native plant species is not expected to have an effect on riparian and aquatic habitat because it would only be al-

lowed if determined that no adverse effects would occur to other resource values.

Re-routing and rehabilitating existing casual use trails and constructing new trails in the riparian areas within the corridors would result in the same impacts as discussed in Alternative 2.

Impacts to Estes Wormwood from increased recreation use would be the same as discussed in Alternative 2.

Limiting chemical use on noxious weeds to a "last case scenario" in upland areas would result in the same impacts to aquatic resources as discussed in Alternative 3.

Excluding livestock grazing from within riparian areas on BLM lands would result in the same impacts to aquatic and riparian resources as discussed in Alternative 3. Impacts from livestock grazing on National Grasslands would be the same as discussed in Alternative 1.

Impacts of managing commercial resources within the river corridors would result in the same impacts as discussed in Alternative 3.

For additional water quantity and quality related analysis refer to the Aquatic and Riparian section within the Management Actions Common to All Alternatives environmental analysis in this chapter.

Impacts to Wildlife

Impacts to wildlife would generally result from vehicle use, concentrated visitor use at more developed sites, dispersed visitor use in wildlife habitat areas, riparian and upland vegetation management, and commercial use. They are illustrated in Table 11 and are discussed below.

Alternative 1 (No Action)

Visitor use of the Steelhead Falls campground and other dispersed areas would continue to impact wildlife as a result of frequent visitor use primarily during the spring, summer, and fall months of the year.

Except for the Steelhead Falls WSA, motorized vehicle use would continue to be designated as open on BLM lands, facilitating off-road vehicle use. Periodic encounters with vehicles and human presence occasionally disrupt wildlife on upland plateaus where vehicle access is easier. Existing seasonal road closures in deer winter range on National Grasslands presently reduce vehicle and visitor encounters with wildlife, enhancing mule deer survival during critical winter months. Reproductive rates the following spring would be improved by minimizing stress on does during this period from conception through early pregnancy.

Motorized vehicle use in accessible areas would result in additional loss of vegetation from wildlife habitat in the long-term.

Non-motorized recreation users within the Middle Deschutes and Lower Crooked River corridors may impact wildlife as a result of disturbance and periodic displacement, especially along the user developed trails.

Wildlife would continue to be harassed and displaced as a result of casual use shooting (plinking) on public lands within the river corridors.

Wildlife species dependent on late seral/climax plant communities for a major portion of their life cycle may be affected in the short-term as a result of habitat displacement after prescribed burning. Wildlife depending on low seral ecological conditions to complete their life cycle would benefit in the short-term until a natural fire dependent ecosystem is re-established.

Figure 11 - Impacts to Wildlife

Managing:	Alt1 (NoAction)	Alt 2	Alt 3	Alt 4	Alt 5 (Pref)
Campgrounds	-L	-M	-L	+L	+L
Dispersed Areas	-L	-L	+L	+L	+L
Trails/Use	-L	-L	NC	-L	NC
Roads/Vehicle Use	-L	+L	+M	+M	+M
Closures	NC	+L	+L	+M	+L
New/Upgrading	-L	-L	+L	+L	+L
Vegetation/Fire	NC	NC	+L	NC	NC
Wildlife	NC	+L	+L	+L	+L
Commercial Use	NC	+L	+L	+L	+L
Overall	NC	-L	+L	+L	+L

+ Beneficial
- Adverse
NC No Change/Impacts Offset
H High
M Medium
L Low
NA Not Applicable

Prescribed fire would enhance ecological diversity and successional plant stages. Juniper thinning would have a short and long-term effect on wildlife. Removal of juniper may stimulate growth of other upland forage. Piling juniper slash would provide excellent habitat for rabbits, quail, chukar, and other small animals. Juniper thinning would slightly reduce this food and shelter resource and may impact birds dependent upon juniper berries as a food source.

No significant effects on wildlife are expected to occur from short-term livestock grazing in small, localized riparian areas. There could be an impact to nesting birds particularly depending on the time of year intense grazing occurs. Over the long-term, livestock use in these areas would be limited, resulting in no noticeable loss of wildlife habitat, diversity, or species richness.

Existing grazing practices in upland plateaus have not resulted in an adverse effect on wildlife. Livestock grazing on the plateaus would continue and could increase, if vegetation potential improved. Increases in livestock use are not expected to adversely affect wildlife because these increases would be dependent upon an improving vegetative condition.

Using livestock as a management tool on deer winter range could improve palatability and nutritional value of forage for wintering deer. Undisturbed forage growth would need to occur for 4 to 5 months after grazing occurred to ensure that the food source is available for the wintering deer.

Use of chemicals on noxious weeds in upland areas would result in increased benefits to vegetation communities that many wildlife

species depend upon for habitat. However, there could be an unquantifiable rate of mortality of wildlife resulting from chemical use.

As a result of low potential mineral resources, it is not expected that wildlife be adversely impacted from commercial resource use activities on public lands within the river corridors. If these activities were to occur, wildlife could be displaced as a result of noise and habitat loss.

Monitoring and inventory of wildlife would result in the establishment of a scientific data base to assist in making future wildlife management decisions.

Alternative 2

Maximizing recreation development within the river corridors would adversely impact wildlife. Use would be concentrated at the developed Steelhead Falls, Lower Bridge and Scout Camp campgrounds. Due to increased use in these areas wildlife species may be seasonally displaced from their habitat niches. Disturbance to wildlife in dispersed camping areas would continue as discussed in Alternative 1.

Impacts to wildlife from vehicle use would be the same as discussed in Alternative 1, except approximately 3 miles of unnecessary vehicle routes would be rehabilitated, creating additional wildlife habitat by allowing native vegetation to re-establish on historic vehicle routes. Increased wildlife disturbance may occur if easements and land owner agreements allow motorized access into heavily used areas on public lands along the plateaus where access currently does not exist.

Approximately 11.25 miles of new trail would be developed into areas receiving limited visitor use. Increased visitor use on these trails would disturb wildlife. Repeated visitor encounters with wildlife species particularly in a confined canyon environment may cause displacement or changes in wildlife movement as a result of repeated human contacts.

Re-routing and/or rehabilitating casual use trails within riparian and upland areas experiencing heavy degradation would improve the quality of habitat and lessen disturbance. Encouraging mountain bike and horse users to stay on existing roads and trails would result in less disturbance to wildlife in areas without trails.

Wildlife would continue to be harassed and displaced as a result of casual use shooting (plinking) on public lands within the river corridors.

Impacts to wildlife as a result of vegetation management would be the same as Alternative 1.

Impacts to wildlife as a result of livestock grazing would be the same as discussed in Alternative 1, except projects to develop additional upland water sources are expected to improve wildlife distribution. Possible displacement of other wildlife species may occur in the immediate project area.

Emphasizing management of native wildlife species and planting native riparian vegetation when necessary for riparian enhancement would improve wildlife habitat, species richness, and animal populations by providing additional forage and cover components in the area. Emphasizing native plant species would also enhance natural plant succession. Maintaining existing native plant and animal populations would continue to maintain habitat integrity for species occupying the river corridors.

Introduction of non-native plant and animal species is not expected to impact wildlife because their introduction would only be possible if determined there were no impacts to

related outstandingly remarkable values. This management action would allow for the continued introduction of non-native species such as chukar.

Impacts of chemical use on noxious weeds in upland areas on wildlife would be the same as discussed in Alternative 1.

Management of commercial resources within the river corridors would result in the same impacts to wildlife as discussed in Alternative 1, except proposed activities would have less of an impact on wildlife within the river corridors.

Increased wildlife management emphasis by conducting comprehensive monitoring and inventory studies and developing a strategy for ongoing protection of federal and state listed threatened, endangered, and sensitive plant and animal species would result in added protection of wildlife resources. Specific projects such as installation of nest boxes would provide long-term benefits to wildlife.

Alternative 3

Impacts to wildlife as a result of recreational development would be the same as discussed in Alternative 2, except fewer developments would occur and resulting impacts would be less. Disturbance to wildlife in dispersed camping areas would be less likely as vehicle access would limit frequent use of these areas.

Vehicle use would be limited to designated roads under this alternative. These vehicle restrictions would reduce encounters with wildlife by preventing vehicle use off roads, particularly in sensitive wildlife habitat areas. Impacts to wildlife from the rehabilitation of unnecessary access routes would be the same as discussed in Alternative 2.

Disturbance to wildlife as a result of use along trails would be the same as discussed in Alternative 2, except fewer miles of trails (5.75 miles) would be constructed or reconstructed. Impacts to wildlife from mountain bike and horse use would be lessened since these uses would be limited to designated roads and trails. Additional restrictions on the discharge of firearms and hunting except during official waterfowl, big game, and upland game seasons would result in beneficial effects on wildlife by minimizing the period that they are harassed and displaced.

Impacts to wildlife as a result of vegetation management would be
the same as discussed in Alternative 2.

Impacts to wildlife from introduction of non-native plant and animal species would be the same as discussed in Alternative 2.

Excluding livestock grazing on all public lands within the upland canyon and riparian areas would not result in notable effects on wildlife species or habitat, due to the small area where grazing is presently allowed within the Middle Deschutes canyon. Vegetative habitat would be enhanced in historic grazing areas by allowing vegetation to mature without livestock utilization.

Installation of gap fencing to keep livestock from riparian areas is not expected to effect wildlife because natural features would be emphasized and fences would be designed to allow for wildlife passage. The impacts on wildlife from developing upland water sources would be the same as discussed in Alternative 2.

Use of chemicals on noxious weeds in upland areas would result in the same impacts to wildlife as discussed in Alternative 1, except limiting chemical use on noxious weeds to a "last case scenario" would result in better protection of wildlife resources, by reducing the possibility of wildlife mortality.

Management of commercial resources within the river corridors would eliminate the potential for wildlife impacts on the majority of lands within these areas. In the short-term, wildlife may still be impacted from existing commercial activities.

Impacts to wildlife from increased management emphasis would be the same as discussed in Alternative 2.

Alternative 4

Impacts to wildlife from recreational development would be minimal under this alternative. Steelhead Falls and Scout camp areas would have limited access, with walk-in use only. Limited access would reduce wildlife disturbance and allow vegetation to grow unimpeded which would enhance wildlife habitat in these areas. Disturbance to wildlife in dispersed camping areas would be less likely as vehicle access would limit frequent use of these areas.

Impacts to wildlife from motorized vehicle access would be the same as discussed in Alternative 3, except 9 miles of roads would be rehabilitated and 4 miles of roads would remain open to motorized use. This would create even more wildlife habitat while reducing related wildlife disturbances.
Impacts to wildlife from mountain bike, horse, and general visitor use on trails within and adjacent to the canyon areas would be the same as discussed in Alternative 1.

Impacts to wildlife by prohibiting discharge of firearms, hunting, and trapping on public lands within the river corridors would result in beneficial effects on wildlife by eliminating wildlife harassment and displacement created by this activity and reducing mortality of wildlife within the river corridors.

Impacts to wildlife as a result of vegetation management would be the same as discussed in Alternative 1, except limiting vegetative manipulation strategies within the river corridors could reduce habitat diversity over the long-term by eliminating tools that could otherwise be used to resolve ecological inadequacies.

Reintroduction of native wildlife species would enhance species richness and diversity within the river corridors. Wildlife viewing and photographic opportunities for visitors would also be enhanced.
Excluding introduction of non-native plant and animal species is not expected to impact wildlife resources in the short-term.

Excluding livestock grazing from all public lands within the corridor would only be noticeable in small, localized areas where grazing is currently allowed and would only minimally affect wildlife species by reducing forage competition.

Discontinuing use of chemicals in the upland areas would not create any impacts on wildlife resources.

Management of commercial resources within the river corridors would result in the same impacts to wildlife as discussed in Alternative 3.

Impacts to wildlife from increased management emphasis would be the same as discussed in Alternative 2.

Alternative 5 (Draft Preferred)

Impacts to wildlife as a result of recreation development at Steelhead Falls and Scout Camp would be the same as discussed in Alternative 1, except limited development and access would reduce impacts to wildlife by concentrating use into specific areas and allowing much of the surrounding vegetation to grow unimpeded. Disturbance to wildlife in dispersed camping areas would continue as

discussed in Alternative 1, except camping area, trail and road network design would limit encounters with wildlife.

Vehicle use would be limited to about 8.5 miles of designated roads under this alternative. Impacts to wildlife as a result of vehicle restrictions would be the same as discussed in Alternative 3.

Impacts to wildlife as a result of use along trails would be the same as discussed in Alternative 3, except not allowing mountain bikes in the canyon areas and encouraging horses to remain on existing developed or user developed trails would benefit wildlife by reducing the number of encounters in more primitive areas.

Impacts to wildlife by providing additional restrictions on the discharge of firearms and hunting during official waterfowl, big game, and upland game seasons would be the same as discussed in Alternative 3.

Impacts to wildlife resulting from vegetation management would be the same as discussed in Alternative 2.

Introduction of non-native plant and animal species would result in the same impacts as discussed in Alternative 2.

Impacts to wildlife from livestock grazing would be the same as discussed in Alternative 3.

Use of chemicals on noxious weeds in upland areas would result in the same impacts to wildlife as discussed in Alternative 3.

Management of commercial resources within the river corridors would result in the same impacts to wildlife as discussed in Alternative 3.

Impacts to wildlife from increased management emphasis would be the same as discussed in Alternative 2.

Impacts to Cultural Resource Values

Impacts to cultural resources could result from motorized and non-motorized recreation use, dispersed camping and day use, public information and education programs, and soil disturbing activities. These impacts are summarized in Table 12 and described below.

A cultural resource assessment would be required before the implementation of any ground disturbing action in this plan.
If a cultural site was found during the inventory, the site would be evaluated to determine its significance. Significant sites would be protected from any adverse effects the proposed project may have. Protection would be accomplished by relocating the ground-disturbing activity to avoid the site, by mitigation of adverse effects, or by not allowing the project.

Alternative 1 (No Action)

Impacts to archeological and historic values would continue to occur where cultural sites and visitor use overlap. Until cultural sites are located and protected, site degradation is likely to occur.

New information about cultural values would remain limited by not emphasizing the need to conduct large scale cultural inventories and having limited monitoring of known cultural sites in the river corridors. Cultural sites not included in an inventory would continue to be difficult to protect.

Restricting vehicle use within the Steelhead Falls campground would help alleviate potential impacts to cultural resources.

Figure 12 - Impacts to Cultural Resource Values

Managing:	Alt1 (NoAction)	Alt 2	Alt 3	Alt 4	Alt 5 (Pref)
Recreation Use: Camping/Roads/Trails	-M	-L	+L	-L	+L
Soil Disturbing Activities	-M	-L	+L	+L	+L
Cultural Resources	-L	+L	+L	+L	+L
Overall	-M	-L	+L	+L	+L

+	Beneficial	H	High	NA	Not Applicable
-	Adverse	M	Medium		
NC	No Change/Impacts Offset	L	Low		

Cultural values would continue to be affected by "pothunting" and other vandalism which have taken place particularly in the Crooked River Canyon over the last 50-plus years. User developed trails mostly within the Middle Deschutes canyon continue to be used by visitors and no cultural resource assessment has been made to see if use on these trails is directly or indirectly affecting cultural values.

Cultural resources would continue to benefit from current off-site education efforts to promote public understanding and appreciation of prehistoric and historic cultural resources to prevent vandalism to these sites.

Not emphasizing federal or state acquisition to protect significant cultural values on private lands may result in degradation or loss of these values from lack of information on their location, potential surface disturbing activities, or looting.

Alternative 2

Impacts to archeological and historic values would continue to occur where cultural sites and visitor use overlap. Until cultural sites are located and protected, site degradation is likely to occur.

Cultural values would be enhanced by conducting systematic, segment-by-segment inventories on public lands and on private lands with landowner consent. Systematic inventory of all public lands would result in more information about the location and importance of archaeological and historic sites. Locating recreation facilities away from significant cultural sites would limit disturbance of sites. Even with more intensive management under this alternative, some cultural values would continue to be affected by "pothunting" and other vandalism particularly in the Crooked River Canyon.

Reduced impacts to cultural values are expected by developing and concentrating visitor camp use at the Steelhead Falls, Scout Camp and Lower Bridge campground areas. Limiting vehicle use to designated vehicle routes and closing and rehabilitating 3 miles of vehicle routes would help protect cultural values by decreasing impacts to them.

Development of new trails and reconstruction of old or user developed trails under this alternative could cause impacts to cultural resources. Reconstructing or consolidating trails would encourage visitor use in non-culturally sensitive areas. Designing high use areas away from significant cultural resource sites or discouraging use in sites where impacts could not be avoided would be implemented.

Gaining easements and constructing 11.25 miles of new trail would allow the public to more easily access previously remote public land, thus increasing the potential for vandalism of cultural sites. This would be particularly true for the connecting trail between the Steelhead Falls Trail and the CCC Trail.

Promoting public appreciation of cultural resources by installing interpretation facilities in campgrounds and trailheads would enhance public respect for cultural values and is expected to decrease vandalism to cultural sites within the river corridors.

Acquisition of fee title, easement, or cooperative agreement on private lands containing significant cultural values with willing private landowners would enhance cultural values that are in need of protection.

Alternative 3

Impacts to archeological and historic values would continue to occur where cultural sites and visitor use overlap. Until cultural sites are located and protected, site degradation is likely to occur.

Cultural values would be enhanced by developing a comprehensive cultural resource monitoring plan and conducting a comprehensive inventory of lands within the corridor boundaries. Locating recreation facilities away from significant cultural sites would limit disturbance of sites. Even with increased management under this alternative, some cultural values would continue to be effected by "pothunting" and other vandalism particularly in the Crooked River Canyon.

Reduced impacts to cultural values are expected by developing and concentrating visitor camp use at the Steelhead Falls and Scout Camp campground areas. Limiting vehicle use to designated vehicle routes and closing and rehabilitating 4 miles of vehicle routes would help protect cultural values by decreasing impacts to cultural values.

The re-routing or rehabilitation of informal trail networks based on resource degradation would help prevent further impacts to cultural sites in or adjacent to these trails.

Impacts to cultural values by pursuing private land acquisitions, interpreting and providing access to cultural sites approved for public interpretation would be the same as Alternative 2.

Alternative 4

Impacts to cultural resources from regulating vehicle use would be the same as under Alternative 3.

Major restrictions of vehicle use within the Steelhead Falls and Scout Camp campground areas would help alleviate potential impacts to cultural resources.

Impacts to cultural resources from recreational use of trails would be the same as Alternative 1.

Impacts to cultural values by pursuing private land acquisitions for National Register eligible sites, interpreting and providing access to cultural sites approved for public interpretation would be virtually the same as Alternative 2.

Alternative 5 (Draft Preferred)

Impacts to cultural resources from inventorying and monitoring would be the same as Alternative 3.

Impacts to cultural resources from regulating vehicle use would be the same as under Alternative 3.

Restrictions of vehicle use within the Steelhead Falls and Scout Camp campground areas would help alleviate potential impacts to cultural resources.

Impacts to cultural resources from recreational use of trails would be similar to Alternative 2, except that those impacts resulting from construction of the connecting trail from Steelhead Falls to the CCC Trail would not occur.

Impacts to cultural resources resulting from the re-routing or rehabilitation of informal trail networks would be the same as Alternative 3.

Impacts to cultural values by pursuing private land acquisitions for significant sites and interpreting and providing access to cultural sites approved for public interpretation would be virtually the same as Alternative 2.

Impacts to Soil and Vegetation

Impacts to soil and vegetation would generally result from vehicle use; road maintenance; camping and day use areas; trail use; and vegetation, wildlife, livestock, and commercial resource management actions. These actions are summarized in Table 13 and are described below.

Management actions as described in the alternatives result primarily in changes in vegetative cover and diversity as well as in soil's physical, chemical and biological properties.

Alternative 1 (No Action)

Recreation Use

Uncontrolled camping and day use primarily at Steelhead Falls, Lower Bridge, and Scout Camp would continue to result in soil erosion and compaction as well as loss of vegetation in these areas. Impacts are caused by vehicle use in these camp areas as well as trampling by visitors and occasional horses. Over the long term these impacts are expected to increase as more visitors use these areas.

With the exceptions of the Steelhead Falls Wilderness Study Area and National Grasslands, the remainder of public land is designed as open for vehicle use. While visitors are encouraged to stay on existing roads or jeep trails, off road driving does occur and is causing the creation of new vehicle routes resulting in additional soil and vegetation loss. Restricting vehicle access to primitive vehicle routes and continuing seasonal vehicle closures on National Grasslands would reduce soil disturbance and loss of vegetation.

Hiking, mountain bike, and horse use on existing user developed trails would continue to effect vegetation and soil from compaction with repeated use. With no definite trail system, users continue to create their own routes particularly in popular use areas. Soil erosion is currently a problem on portions of the Steel-

head Falls, Scout Camp, Squaw Creek, CCC and Geneva Point trails due to steep slopes. Much of the terrain within the river corridors is rugged and new trail creation is limited by the rough topography.

Rehabilitation of the Steelhead Falls trail and development of the Squaw Creek Trail would reduce localized disturbance to vegetation by confining visitor use to one area. Stabilization of eroding soils along these user-developed trail would allow establishment of more vegetation.

Allowing firewood collection for on-site use would continue to deplete existing wood supply around designated sites within a short period of time, removing woody debris and litter necessary for soil stability.

Other Resource Use

Management of vegetation and wildlife habitat by maintaining the ecological condition between mid and late seral in the upland areas with strategies such as prescribed fire and juniper thinning would result in both short and long-term impacts to soil and vegetation resources. Soils and vegetation could be impacted in the short-term as a result of wind and soil erosion that would follow prescribed burning or tree cutting. Soil conditions altered from fire could last as long as 10 years or until pre-fire conditions are regained.

Removal of some juniper whether through thinning or fire would have a moderate long-term effect on vegetative diversity by releasing

Table 13 - Impacts to Soil and Vegetation

Managing:	Alt1 (NoAction)	Alt 2	Alt 3	Alt 4	Alt 5 (Pref)
Campgrounds	-L	+L	+L	+M	+L
Trails/Use	-L	+L	+L	-L	+L
Roads/Vehicle Use	-L	+L	+M	+M	+M
Closures	+L	+L	+M	+M	+M
New/Upgrading	-L	+L	+L	+M	+L
Veg./Wild. Habitat	NC	NC	+L	+L	NC
Livestock	-L	-L	+L	+L	+L
Commercial Use	-L	+L	+L	+M	+L
Overall	-L	+L	+L	+M	+L

\+ Beneficial H High NA Not Applicable
\- Adverse M Medium
NC No Change/Impacts Offset L Low

water and nutrients for other high desert plant species, changing plant density and distribution. Mosaic juniper thinning strategies would result in a decrease in juniper dominated plant communities with a conversion to a shrub and grass community. In the long-term this community would indirectly stabilize soils and return the ecosystem to a more natural fire dependent ecosystem.

Allowing the use of non-native plants in revegetation projects may change natural ecological conditions resulting from non-native plants out competing native species by becoming established faster and providing more immediate reduction in soil loss.

Upland vegetation communities would continue to benefit from the use of chemicals for protection against intrusion of noxious weeds and for use in other vegetation enhancement projects. Soil biology could be impacted in the short-term.

Monitoring and inventory of threatened, endangered, sensitive and other plant species would help ensure their protection.

Commercial Use

Some small localized short-term impacts to soil and vegetation could result from the issuance and development of rights-of-way on public lands within the river corridors.

Impacts to soil and vegetation are not anticipated on BLM lands from mineral exploration or development within the river corridors due to the low potential for these resources. Some saleable mineral activities could occur in limited areas resulting in short-term stripping of soil and vegetation. In the long-term, quarry sites would be rehabilitated and stabilized with vegetation.

Mineral activities are prohibited on lands administered by the National Grasslands, therefore, no impacts would occur to soil or vegetation resources.

Soil and vegetation resources in the riparian areas would continue to be slightly impacted from continuing grazing. The vegetation loss and erosion created from grazing is limited due to the small amount of areas grazed, the short season of use, and limited number of livestock present.

Alternative 2

Recreation Use

The designation of camping areas at Lower Bridge, Steelhead Falls and Scout Camp, as well as designated trailheads and parking areas, would result in limiting soil erosion, compaction, and vegetation loss to these specifically planned areas.

Some soil erosion and vegetation loss would continue from uncontrolled camping and day use throughout the river corridors in popular hunter or other primitive camps. Most of these impacts are caused by vehicle use as well as trampling by visitors and occasional horses. Over the long term these impacts are expected to increase as more visitors use these areas.

With the exception of the Steelhead Falls Wilderness Study Area and National Grasslands, the remainder of public land is designated as open for vehicle use. Visitors would be encouraged to stay on existing roads or jeep trails, however, some off road driving would occur causing the creation of new vehicle routes resulting in additional soil and vegetation loss.

Closing and rehabilitating 3 miles of unnecessary vehicle routes would result in new and

increased plant growth in previously impacted areas, benefiting soil stability and vegetative cover. Long-term reduction of soil erosion would occur from upgrading primary vehicle routes that access major camping and day use areas. Restricting vehicle access to primitive vehicle routes and continuing seasonal vehicle closures on National Grasslands would reduce soil disturbance and loss of vegetation.

Impacts to soil and vegetation may result from additional lands being impacted from new motorized access resulting from easements and co-operative agreements with willing landowners.

Trail construction would be maximized under this alternative and would cause both short and long-term impacts to soil and vegetation resources. Short-term impacts from the reconstruction of approximately 2.25 miles of trails would result in some soil and vegetation loss from widening, stabilizing, and rerouting these user-developed trails into more durable trails for sustained hiking, mountain bike and horse use. The construction of 11.25 miles of new trails would result in long-term commitment of soil compaction and vegetative loss particularly in riparian areas along the Middle Deschutes river.

The presence of a good trail system within the river corridors would, in the long-term, help stabilize steeper slopes where networks of user trails are causing vegetation loss and soil erosion. Visitors whether hiking, using mountain bikes or horses are likely to stay on these developed trails and avoid cross-country travel thus helping to reduce erosion. The rehabilitation of these no longer needed user developed trails would cause an increase in vegetation cover and result in better soil stability.

Impacts to soil and vegetation from firewood collecting would be the same as Alternative 1.

Other Resource Use

Impacts to soil and vegetation resulting from upland vegetation and wildlife management practices would be that same as Alternative 1.

Development of upland water sources for wildlife and livestock could result in small, localized vegetation loss and soil erosion around water areas.

Enhanced monitoring and inventory strategies for threatened, endangered, sensitive and other plant species would help ensure their protection.

Commercial Use

Impacts to soil and vegetation from mineral activities would be the same as Alternative 1, except that no saleable mineral sites would be developed.

The effects of livestock grazing on soil and vegetation would be the same as Alternative 1.

Alternative 3

Recreation Use

Impacts to soil and vegetation from camping would be the same as Alternative 2, except the Lower Bridge area would remain undeveloped. Unregulated camping and day use in this area would continue to cause resource degradation from vegetation loss and soil erosion.

Under this alternative impacts to soil and vegetation resources from vehicle use would be lessened due to a Limited Vehicle Designation on all public lands within the river corridors. Vehicles would be restricted to approximately 9 miles of designated vehicle routes. Long-term reduction of soil erosion would occur from upgrading primary vehicle routes that access

User developed trails that access remote river canyon areas frequently experience heavy use resulting in adverse impacts to soils and adjacent vegetation

major camping and day use areas. Additionally, motorized access on private lands would not be pursued under this alternative. About 4 miles of existing routes would be closed and rehabilitated, resulting in new and increased plant growth in previously impacted areas, benefiting soil stability and vegetative cover.

Restricting vehicle access to primitive vehicle routes and continuing seasonal vehicle closures on National Grasslands would reduce soil disturbance and loss of vegetation.

Impacts to soil and vegetation from the reconstruction of 2.25 miles of trail and the construction of 4.5 miles of new trail would result in the same types impacts as in Alternative 2. Limiting mountain bike and horse use to designated roads and trails would help alleviate erosion and vegetation loss caused from their use in undisturbed areas or areas with unstable soils.

Not allowing firewood collection for on-site use would reduce the removal of woody debris that is necessary for soil stability.

Other Resource Use

Impacts to soil and vegetation resulting from upland vegetation and wildlife management practices would be that same as Alternative 1. except the use of chemicals would be prohibited.

Impacts to soil and vegetation resources as a result of developing upland water sources for

wildlife and livestock would be the same as Alternative 2.

Enhanced monitoring and inventory strategies for threatened, endangered, sensitive and other plant species would help ensure their protection.

Commercial Use

Impacts to soil and vegetation from issuance of right-of-ways and utility corridor management would be the same as Alternative 2.

Impacts to soil and vegetation as a result of saleable mineral activities would be the same as Alternative 2.

Extending the no surface occupancy for leasable minerals and pursuing a withdrawal of public lands seen from the Middle Deschutes and Lower Crooked Rivers from locatable minerals would result in protection of soil and vegetation resources exploration and development activities. Regardless of the withdrawal, however, soil and vegetation resources are not expected to be impacted due to low energy and mineral potential.

Impacts to soil and vegetation from mineral activity on National Grasslands would be the same as Alternative 1.

Over the long-term, soil and vegetation resources in the riparian areas would be slightly enhanced by limiting livestock to the upland plateau areas. Due to the limited amount of riparian area grazed, the short season of use and limited number of livestock these beneficial impacts would be limited.

Alternative 4

Recreation Use

Designated semi-primitive walk-in campgrounds at Steelhead Falls and Scout Camp would limit human and vehicle disturbance to soil and vegetation by eliminating random vehicle and camping use in these areas. Designated parking areas and one designated road to each of these camping areas would impact soil and vegetation in small areas during construction, but would enhance soil and vegetation in the surrounding areas by restricting vehicle use and allowing regrowth of new vegetation in previously disturbed areas.

Impacts to soil and vegetation from vehicle use would be the same as Alternative 3.

Under this alternative, trails would not be developed and users would continue to utilize the user developed paths. Impacts are expected to be similar to those described in Alternative 1, except more erosion and vegetation loss would be expected around Steelhead Falls. Limiting mountain bike use to designated roads would help alleviate any erosion caused from their use in undisturbed areas or areas with unstable soils. Some impacts to soil and vegetation would still be expected to occur in popular use areas, due to use on trails not hardened or upgraded to sustain repeated use.

Impacts to soil and vegetation from firewood collecting would be the same as Alternative 3.

Other Resource Use

Impacts to soil and vegetation resulting from upland vegetation and wildlife management practices would be that same as Alternative 1, except the use of chemicals would be prohibited.

Impacts to soil and vegetation resources as a result of developing upland water sources for wildlife and livestock would be the same as Alternative 2.

Enhanced monitoring and inventory strategies for threatened, endangered, sensitive and other plant species would help ensure their protection.

Commercial Use

Soil and vegetation resources would receive maximum protection under this alternative since no new rights-of-way or utility corridors would be allowed on Federal lands within the river corridors.

Impacts to soil and vegetation resources from saleable mineral activity sites would be the same as Alternative 2.

Pursuing withdrawals for both locatable and leasable minerals within the river corridor boundaries would result in maximum protection of soil and vegetation. Regardless of the withdrawal, however, these resources are not expected to be impacted due to low energy and mineral potential.

Impacts to soil and vegetation from mineral activity on National Grasslands would be the same as Alternative 1.

Over the long-term, soil and vegetation resources would be slightly enhanced by eliminating livestock grazing from the river corridors. Due to the limited amount of area grazed, the short season of use and limited number of livestock, these beneficial impacts would be limited.

Alternative 5 (Draft Preferred)

Recreation Use

The management of camping areas at Steelhead Falls and Scout Camp would result in similar impacts to soil and vegetation as described in Alternative 1. Added resource protection measures in these areas would benefit soil and vegetation resources.

Impacts to soil and vegetation resources from reconstructing 2.25 miles of trail and constructing 4.75 miles of new trail would be about the same as in Alternative 2. Limiting horse use to designated roads and trails in the plateaus and mountain bike use to designated roads and trails within the river corridors would help spread out the erosional impacts from these uses.

Impacts to soil and vegetation resources from vehicle use would be essentially the same as Alternative 3. Vehicles would be restricted to approximately 11.3 miles of designated vehicle routes while about 4 miles of existing routes would be closed and rehabilitated.

Not allowing firewood collection for on-site use would reduce the removal of woody debris that is necessary for soil development.

Other Resource Use

Impacts to soil and vegetation resulting from upland vegetation and wildlife management practices would be that same as Alternative 2.

Impacts to soil and vegetation resources as a result of developing upland water sources for wildlife and livestock would be the same as Alternative 2.

Enhanced monitoring and inventory strategies for threatened, endangered, sensitive and other plant species would help ensure their protection.

Commercial Use

Impacts to soil and vegetation from issuance of right-of-ways and utility corridor management would be the same as Alternative 2.

Impacts to soil and vegetation as a result of saleable mineral activities would be the same as Alternative 2.

Impacts to soil and vegetation as a result of leasable or locatable mineral activities would be the same as Alternative 4.

Impacts to soil and vegetation as a result of livestock grazing would be the same as Alternative 3.

Impacts to Commercial Resource Use

Impacts to commercial resource use would generally result from management actions which would change the manner and degree commercial use that occurs in the river corridors. These are summarized in Table 14 and discussed below.

Alternative 1 (No Action)

Reality Actions

There would be no impacts to rights-of-way and utilities corridor management under this alternative. Potential and existing permittees would be required to remain in compliance with existing rights-of-way stipulations.

Mineral and Leasing Activities

There would be no impacts to mineral resource activities under this alternative. Potential and existing permittees would be required to follow existing regulations for leasable, saleable and locatable mineral activities on public lands within the river corridors.

Livestock Grazing

There would be no impacts to livestock grazing activities under this alternative. Permittees would be required to remain in compliance with allotment use stipulations.

Alternative 2

Realty Actions

Under this alternative, new rights-of-ways and utility corridor applications may be approved if they are not visible from the rivers. This should not create major impacts since several utility corridors already exist in the areas and new rights-of-ways applications are not expected.

Mineral and Leasing Activities

New saleable mineral sites would not be available under this alternative. New sources would have to be found and developed outside of the river corridor boundaries. These resources may have regional, cumulative significance but for the area itself, it is considered negligible and unproductive for saleable resources. Opportunities for the Opal Springs Water District to obtain cinders within its vicinity would be foregone under this alternative because the Geneva cinder pit would not be available. The next closest material source is distant, resulting in increased costs for this public utility to maintain its roads.

There would be no impacts to locatable or leasable mineral resource activities under this alternative.

Table 14 - Impacts to Commercial Resource Use

Managing:	Alt1 (NoAction)	Alt 2	Alt 3	Alt 4	Alt 5 (Pref)
Utility/Trans. Corridors	NC	NC	NC	NC	NC
Leasable Minerals	NC	NC	NC	-L	NC
Saleable Minerals	NC	-L	-L	-L	-L
Locatable Minerals	NC	NC	-L	-L	NC
Scenic Resources	NC	NC	-L	-L	-L
Overall	NC	NC	-L	-L	NC

\+ Beneficial H High NA Not Applicable
\- Adverse M Medium
NC No Change/Impacts Offset L Low

Livestock Grazing

Developing upland water sources for livestock would result in benefits to livestock grazing by enhancing distribution and forage utilization. Construction of riparian enclosures would not result in any reduction of AUM's and would not significantly impact livestock grazing operations.

Alternative 3

Reality Actions

Impacts to rights-of-way and utilities corridor management would be the same as Alternative 2.

Mineral and Leasing Activities

Under this alternative, saleable mineral resources would no longer be available for sale. Impacts would be similar to those described under Alternative 2.

Under this alternative 3,440 acres of BLM land would require no surface occupancy stipulations for leasable minerals. These affected lands would be those visible from the rivers. The BLM would also pursue a mineral entry withdrawal for those same 3,440 acres of land. There would be no impacts to other mineral resources on lands administered by the National Grasslands.

Due to low potential for leasable and locatable minerals within this area little impact is expected to occur from these actions.

Livestock Grazing

Livestock grazing on BLM lands within the canyon rims would be eliminated, resulting in the loss of approximately 10 AUM's from the Cooper Allotment (7514). This reduction would impact one permittee by reducing the number of animals on the existing pasture and/or having to find pasture elsewhere. A slight economic loss may result to the permittee. There would be no effect to livestock operations in allotments upon the National Grasslands, sense no livestock currently graze between the canyon rims.

Alternative 4

Reality Actions

Impacts to rights-of-way and utilities corridor management would be the same as Alternative 2.

Mineral and Leasing Activities

Impacts to saleable mineral resource activities would be the same as Alternative 2.

Under this alternative BLM would pursue a mineral entry and mineral leasing withdrawal for 3,440 acres. This would effect all BLM lands within the river corridors. There would be no impacts to other mineral resources on lands administered by the National Grasslands.

Due to low potential for leasable and locatable minerals within this area little impact is expected to occur from these actions.

Livestock Grazing

Livestock grazing on public lands within the river corridors would be eliminated, resulting in the loss of approximately 65 AUM's on BLM lands and 150 AUM's on National Grasslands. This reduction would impact two permittees on BLM allotments and three permittees on National Grassland allotments by reducing the number of animals on the existing pastures and/or having to find pasture elsewhere. A slight economic loss may result to the permittees.

Alternative 5 (Draft Preferred)

Reality Actions
Impacts to rights-of-way and utilities corridor management would be the same as Alternative 2.

Mineral and Leasing Activities

Under this alternative, saleable mineral resources would no longer be available for sale. Impacts would be similar to those described under Alternative 2.

Impacts to leasable and locatable mineral resource activities would be the same as discussed in Alternative 1. There would be no impacts to other mineral resources on lands administered by the National Grasslands.

Due to low potential for leasable and locatable minerals within this area little impact is expected to occur from these actions.

Livestock Grazing

Livestock grazing on BLM lands within the canyon rims would be eliminated, resulting in the loss of approximately 10 AUM's from the Cooper Allotment (7514). This reduction would impact one permittee by reducing the number of animals on the existing pasture and/or having to find pasture elsewhere. A slight economic loss may result to the permittee. There would be no effect to livestock operations in allotments upon the National Grasslands, sense no livestock currently graze between the canyon rims.

Impacts to Air

Impacts to air quality are expected to remain constant over the range of alternatives.

Prescribed fires or conditional fire suppression, wildfire, and/or mechanical treatment of vegetation and dust from exposed or disturbed soils would temporarily effect air quality.

Prompt detection and suppression of wildfires would have a beneficial effect on air quality.

Temporary localized increases in suspended particulates resulting from prescribed burning and/or conditional fire suppression would result in short-term impacts to air quality. Short-term impacts to air quality would also result from dust created by mechanical treatment of vegetation and possibly road and facility development.
Long-term impacts to air quality are not expected to occur from increased recreation use. Under Alternative 1, short-term impacts would continue to result from dust created by undefined camping areas and random vehicle use.

Impacts to Land Ownership

Changes in overall land ownership are not expected to effect the ability of the land managing agencies to effectively manage public lands within the river corridors. The Draft Preferred Alternative would result in changing existing interim wild and scenic river boundaries to include 3,645 acres of BLM managed public lands, 2,535 acres of National Grasslands, 210 acres of state lands, and 2,870 acres of private land within the new river corridors.

Although Alternatives 3, 4 and the Draft Preferred Alternative increase the amount of private lands within the wild and scenic river boundaries, no adverse impacts to private landowners are expected to occur. Federal land managing agencies have no jurisdiction over these lands. Management of private lands within the corridors would remain subject to state and county rules and regulations.

Impacts to Socioeconomics

Impacts to socioeconomics would primarily result from increases and changes in recreation activity, livestock grazing operations, and commercial resource uses.

Year round recreation opportunities within both river corridors would help support a stable local tourism economy in Deschutes and Jefferson counties. Management actions under all alternatives as well as expected increased trends in recreation use could further stimulate this economy. Potential increases in recreation activity could also attract new tourism related businesses, especially under Alternative 2. Increased activity may also result in some increases in related employment. As a result, some new sales tax revenues could be generated from increased recreation related purchasing in the area. No overall increases in income levels are likely to result from any alternatives.

Potential increases in recreation use may put stress on emergency, law enforcement, and road maintenance services. Funding and cooperative agreements would help to mitigate the effects of potential increased recreational use.

Eliminating livestock grazing on all public lands within the river corridors as described in Alternative 4 could adversely impact local ranching operations by removing 215 AUM's from commercial use. Under the remaining alternatives, changes in grazing operations are not expected to adversely impact local ranching operations, nor the economies of Deschutes or Jefferson counties.

Under all alternatives, management of saleable, locatable, or leasable minerals is not expected to significantly impact those seeking to develop these localized mineral resources. However, management of these resources could result in regional, cumulative impacts if they became unavailable on other public lands in the local vicinity.

Housing construction and residential development on private lands within the river corridors would continue to play a major role in economies of Deschutes and Jefferson counties. The

high rate of in-migration of retirees and those seeking country living experiences, coupled with differences in lifestyles between newcomers and locals, could create social conflicts within the local population. These activities are expected to contribute to increases in diversified recreation use within the river corridors.

Impacts Resulting from Management Actions Common to All Alternatives

Some management actions have already been taken, or are in the process of being implemented by one or more of the managing agencies as a result of previous planning decisions or interagency agreements. Other actions believed to lack public controversy or which do not significantly impact the environment are described as "Management Actions Common to All Alternatives." These management actions would primarily result in beneficial effects to resources within the river corridor. Impacts resulting from many of these management actions have already been analyzed by the BLM Brothers/Lapine Resource Management Plan and Environmental Impact Statement and the Crooked River National Grassland Environmental Impact Statement and Land and Resource Management Plan. Those actions not discussed in the previous section or in other documents that could result in notable impacts are briefly discussed below.

1. Congressional designation of the Steelhead Falls Wilderness Study Area as Wilderness would effect visitor use under all alternatives by preventing vehicle use in traditional use areas. This would especially effect visitors who camp in the Steelhead Falls primitive campground. Feeling of isolation and opportunities for more primitive recreation pursuits would continue to be provided.

2. Creating special use areas or restrictions for recreation opportunities identified as high impact through Limits of Acceptable Change monitoring, would adversely effect some visitors in the short-term who have traditionally used these areas for their favorite recreation activity. Long-term adverse impacts are not expected as these visitors would find other areas to recreate either inside or outside the river corridors.

3. Beneficial impacts to the physically challenged would result under all alternatives by having all new recreation development consider barrier free access and installing facilities for visitors with disabilities when determined to be necessary.

4. Maintaining whitewater floating access that is primitive and undefined under all alternatives would continue to maintain isolated river experiences and difficult portaging for whitewater kayaking/rafting experts.

5. Pursuing scenic easements, acquisition, and/or land exchanges with willing landowners and forming a public/private stewardship groups to help implement this management plan would result in positive effects to visitor use and resource protection under all alternatives. Retaining public lands and managing public access to discourage unauthorized access to private lands would also result in the same beneficial effects.

6. By using the techniques of landscape ecology concepts and existing scenic resource planning and analysis tools, all management activities would be designed to blend with the natural terrain to avoid contrast with character of the surrounding landscape. Potential contrasts from site developments would be partially mitigated through the use of professional landscape design skills, native or natural-appearing materials, and vegetative screens. In all alternatives, rehabilitation efforts would minimize impacts to scenic quality by minimizing disturbance. The

Visual Resource Management study's Scenic Quality Rating Unit classifications would act as indicators to ensure scenic resources are not impacted in the long-term.

7. Conducting instream flow studies to biologically determine appropriate flows and monitoring water quality would provide valuable information for those parties involved in establishing appropriate minimum instream flows in both rivers. This could ultimately help protect and enhance outstandingly remarkable values under all alternatives.

8. Actively monitoring the river corridors to maintain non-impairment of water quality would result in increased protection of aquatic resources. This would also lead to early detection of upstream and adjacent water quality impact sources.

9. Under all alternatives, water quality is likely to experience short-term impacts as a result of erosion and sedimentation created by ground disturbing activities such as installation of fish habitat structures or trail stabilization.

10. Maintaining upland ecological condition between mid and late seral status with strategies such as prescribed fire and juniper thinning would result in short and long-term adverse impacts to water quality. Short-term impacts would occur as a result of increased soil erosion, turbidity, and sedimentation after prescribed burning and juniper thinning takes place. In the long-term vegetative growth would enhance soil stability reducing these impacts.

11. Continuing to maintain the ecological condition of upland vegetation between mid-late seral status for vegetative diversity in the upland environment, would result in long-term benefits to wildlife by maintaining habitat diversity. Managing deer winter range for a 40/60 cover/forage ratio with 40 percent of the range in thermal/hiding cover would increase the ability of wintering mule deer to find food and shelter as well as increase survival and reproduction.

12. Allowing fires to burn within the river corridors is not expected to adversely effect adjacent private lands or private residences because prescribed burns and conditional fire suppression would only be allowed when they do not threaten or damage private property or other primary values. Although difficult to analyze, fires escaping control could result in adverse impacts to adjacent private lands.

13. Developing a coordinated public education program and sign plan; implementing camping, day use and safety regulations; emphasizing "No Trespassing", "Pack It In - Pack It Out" and "Tread Lightly" ethics would help ensure long-term protection and enjoyment of the outstandingly remarkable values and help reduce trespass and vandalism within the river corridors.

14. Short-term impacts on air quality would result from dust created from surface material movement in the quarry area near Lower Bridge and the cinder pit by Opal Springs. Dust from these quarry operations is limited to small areas and usually of short duration.

Irreversible or Irretrievable Commitment of Resources

Areas committed to facilities, roads, and agency-developed trails constitute an irretrievable loss of vegetative production. Land committed to major roads and facilities could be considered to be an irreversible effect.

Short-Term Use and Long-Term Productivity

The most significant activity proposed by the alternatives is the continued management of vegetation for wildlife habitat as well as the continued management of recreation. The short-term effects increase the long-term productivity as existing conditions are altered to enhance the long-term conditions. Short-term use of soils for roads and use sites which compact soil will reduce the long-term productivity on a site specific basis. This would occur in highly defined areas in only a small portion of the river corridor.

Probable Adverse Environmental Impacts that Cannot be Avoided

Soil would be displaced as a result of road, trail, and campground construction. Overall, soil productivity would be maintained except for sites dedicated to roads, recreation sites, and other facilities which compact the soil or occupy a site.

Air quality may be temporarily degraded in localized areas as a result of prescribed fires.

Short-term degradation of visual quality in recreation and visual areas would occur as a result of recreation site and trail construction until vegetation covers the disturbed areas.

Cumulative Impacts

Regulations implementing National Environmental Policy Act define cumulative impacts as: The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The purpose of this portion of the management plan is to determine if any of the proposed management actions proposed in this management plan contain actions that could contribute to cumulative impacts, that are either adverse or beneficial. The following is a discussion of the most likely cumulative impacts believed to be relevant to the key issues addressed in this environmental assessment.

1. Fish, wildlife, riparian, and other river related resources benefit from using results from an instream flow study in cooperation with other agency requirements in order to determine and recommend appropriate minimum instream flows for the Middle Deschutes and Lower Crooked Rivers. All river related resources would benefit in the long-term, if more stable flows occurred.

2. Beneficial effects of using fire management and other vegetation management strategies would help support a more productive watershed ecology within the Middle Deschutes and Lower Crooked River basin.

3. Cumulative effects on landscape character inside and outside the designated boundaries are likely to occur as a result of actions which cause visual change. Landscape characteristics are generally expected to remain natural in appearance under the proposed management actions. However, prescribed burning and wildlife would adversely effect scenic quality in the short-term until revegetation occurred on the landscape.

4. It is expected that management actions that provide beneficial effects to recreation experience would increase recreation use. These management actions and increasing

trends in recreation use are expected to also increase demand for public land resources such as campsites, fish, etc., while providing increased tourism for local economies.

5. Management of saleable, locatable, or leasable minerals is not expected to significantly impact those seeking to develop these localized mineral resources. However, management of these resources could result in regional, cumulative impacts if they became unavailable on other public lands in the local vicinity.

V. Implementation

A. Roles and Interagency Relationships

Once adopted, the Middle Deschutes/Lower Crooked River Management Plan will embody Alternative 5 (Preferred) and Management Actions Common to All Alternatives as discussed in Chapter 2. The River Management Plan will then trigger amendments to the Brothers/LaPine Resource Management Plan (RMP) and the National Grassland Land and Resource Management Plan. These RMP's currently provide direction for all resource management programs, practices, uses, and protection measures on lands managed by the Bureau of Land Management and National Grasslands in the general vicinity of the river corridors. Since the Brothers/LaPine and National Grassland RMP's are already in effect, they will be amended to incorporate the River Management Plan.

Successful implementation of the Middle Deschutes/Lower Crooked River Management Plan will require close coordination and cooperation between numerous federal, state, and local government agencies. The primary roles and responsibilities of these management partners are outlined in Chapter 1. Specific roles and responsibilities of the joint management partners beyond those outlined in Chapter 1 are discussed throughout the remainder of this Chapter.

In general, each managing agency would be responsible for management and plan implementation for lands under their jurisdiction. Each managing agency would also be responsible for entering into cooperative agreements with the other managing agencies to ensure management consistency within the river corridors. Management of private landowner compliance to State Scenic Waterway rules on the Middle Deschutes River would remain the responsibility of State Parks in cooperation with Deschutes and Jefferson counties. State Scenic Waterway rule making actions and responsibilities as defined in this plan would remain subject to state-level rule making and adoption.

B. Standards and Guidelines

The Standards and Guidelines listed below state the bounds or constraints within which all practices will be carried out in achieving the planned goals and objectives for lands managed by the Crooked River National Grasslands in management areas MA-G6 (Crooked River Recreation Area) and MA-G7 (Deschutes River Scenic Corridor). Standards and guidelines for BLM management actions defined in this plan are found throughout the document. More specifically, in the Draft Preferred Alternative, Management Actions Common to All Alternatives, and the monitoring section within this chapter. The Final Management Plan will specifically address Standards and Guidelines needed to amend existing resource management plans for both federal managing agencies.

Recreation Opportunities

Practice - Recreation Opportunity Spectrum (ROS)

Standard and Guideline - Semi-primitive non-motorized recreation opportunities will be managed for within the canyon rims and semi-primitive motorized recreation opportunities will be managed for on the plateaus.*

Practice - Trails

Standard and Guideline - Utilize the existing paths into the canyon as trails, and improve or re-route these trails as necessary to protect soil, water, other river values, and provide for user safety. Reconstruct and/or maintain existing user trails to standards suitable for amount and type of use.*

Develop semi-primitive trailheads as needed to provide for public safety and sanitation. Trailhead capacity and design will be in keeping with ROS class.

Use of mountain bikes will be limited to the upland plateaus within the river corridor, on designated roads and trails.*

Use of horses will not be limited on the upland plateaus, however, horse use within the confined river canyons will be limited to designated routes.*

Practice - Developed Recreation

Standard and Guideline - Cooperative recreation projects such as scenic overlooks and signing should be coordinated with private landowners and local governments.*

Prepare site plans prior to rehabilitation, expansion, or construction projects.

Developed facilities necessary to meet user demands will be in line with the carrying capacity of the area.

Develop trailheads at Geneva Point and the old CCC trail.*

Practice - Off-Road Vehicle Use

Standard and Guideline - Motorized use restricted to designated routes on the semi-primitive motorized areas on the plateaus.*

Firewood

Practice - Fuelwood

Standard and Guideline - Allow fuelwood gathering for on-site use only.

** means this is a new standard and guideline, different than that already in the Crooked River National Grassland Land and Resource Management Plan.*

Fire

Practice - Suppression

Standard and Guideline - No open campfires allowed between June 1 and October 15.

Minimize physical disturbance. Confine, contain, or control fires utilizing conditional use fire suppression and/or confine or contain strategies whenever possible.

Use prescribed fire to maintain the naturalness of the area,
provide scenic diversity, and vegetative management.

Allow fuels to accumulate at a natural rate unless they threaten the objectives of the management area.

Practice - Cooperation

Standard and Guideline - Coordinate activities through the Central Oregon Fire Prevention Cooperative Fire Management Plan (or its equivalent). Special emphasis should be placed on developing a strategy to deal with the rural/urban interface within the river corridors.*

Lands

Practice - Special Recreation Uses

Standard and Guideline - Issue special recreation use permits only after a public need has been demonstrated that applies to a significant number of recreationists. This policy may not include business opportunities.

The experience provided through the permit must be compatible with the ROS classification of the management area.

Limit the number of special use permits for a specific use, to the extent possible, in order to minimize administrative costs and to create economic conditions that provide a high quality public service.

Minimize the impact of special use permits on other users through the operating plan.

Practice - Trespass

Standard and Guideline - Coordinate with private landowners, county and state governments to minimize trespass problems that may occur on private lands adjoining federal lands.*

Practice - Rights-of-way

Standard and Guideline - Grant rights-of-way only where river values would not be adversely affected.*

Practice - Land Ownership and Adjustment

Standard and Guideline - Acquire private inholdings from willing landowners as necessary (see Land Ownership Map and Plan, Appendix B of the Crooked River National Grassland Land and Resource Management Plan).

Practice - Utility Corridors

Standard and Guideline - Replacement of existing facilities would be allowed at the current level of development within existing utility corridors as long as scenic or other outstandingly remarkable values are not adversely impacted. Upgrading of existing facilities could only be done after environmental analysis showed that no adverse impacts to these resources would occur.*

No additional river crossing sites will be considered.*

Minerals and Energy

Practice - Leasing and Common Variety Minerals

Standard and Guideline - Allow no use, occupancy, or surface disturbance within the river corridor.

Social and Economic

Practice - Native American Rights

Standard and Guideline - Consider and provide for the ceded land rights (treaty rights) of the Warm Springs Confederated Tribes in all Grassland related management activities.

Coordinate resource activities with the designated representative of the Confederated Tribes of the Warm Springs Indian Reservation.

Protect and preserve, for Native American Indians, access to and use of traditional sites, the possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

Coordinate location and protection of these areas with representatives of the Confederated Tribes of the Warm Springs Indian Reservation. Consider the plans and policies of other Federal, State, local, and American Indian tribal governments in plan implementation.

Cultural Resources

Practice - All existing Standards and Guidelines within the Crooked River National Grassland Land and Resource Management Plan apply.

Fisheries

Practice - Cooperation

Standard and Guideline - Coordinate with the Oregon Department of Fish and Wildlife to protect and enhance the outstandingly remarkable and significant fish and wildlife habitat within the river corridor.*

Coordinate with ODF&W to maintain or enhance the natural fisheries within the rivers.*

Practice - Habitat Management

Standard and Guideline - Fish passage structures would be allowed only if they do not detract from the river values or affect free-flow characteristics.*

Improve fish spawning habitat within the river corridor if it does not detract from river values.*

Allow no uses that would detract from the outstandingly remarkable raptor habitat within the river corridor.*

Rivers designated as Wild and Scenic Rivers would be preserved in their existing free-flowing condition without impoundments, diversions, straightening, rip-rapping, or other modification of the river that adversely affect the outstandingly remarkable values for which they were designated.*

Water Quality and Quantity

Practice - Monitoring and Flow Analysis

Standard and Guideline - Meet or exceed water quality standards for waters of the State through application of Best Management Practices. Meet State standards for temperature, turbidity, and waste discharge.*

Conduct instream flow studies to determine the minimum water quantity necessary to protect and enhance outstandingly remarkable and significant river values.*

Vegetation

Practice - Riparian Habitat Management

Standard and Guideline - Management practices designed to stabilize river bank slopes and protect riparian vegetation will be in keeping with the visual quality of the area. Natural appearing methods would be required. Use of non-native species will be discouraged.*

Practice - Biological Diversity

Standard and Guideline - Identify and manage unique ecological communities through the Grassland implementation and monitoring process.

Utilize a combination of grazing (on the plateaus), juniper thinning, vegetation manipulation, fire management, and other vegetation and wildlife habitat enhancement tools to manage the upland environment. Natural appearing enhancement projects would be emphasized. Chemical management would be allowed in upland areas only when no other vegetation management tools are appropriate.*

Threatened, Endangered, and Sensitive Plants and Animals

Practice - Monitoring and Coordination

Standard and Guideline - Cooperate with State and Federal fish and wildlife agencies in developing recovery plans for threatened or endangered wildlife species. Recovery plans take precedence over other management activities.

Consult with U.S. Fish and Wildlife Service when conflicts between project activities and habitat needs cannot be resolved, or when uncertainty exists.

Inventory and protect sensitive plant species and their habitat.

Maintain inventories of essential or critical wildlife habitats including their location and distribution.

Maintain contacts with Federal, State, and other agencies, groups, and individuals concerned with the management of threatened and endangered plant and animal species. Consult with the Oregon Department of Fish and Wildlife, Oregon Natural Heritage Data Base and U.S. Fish and Wildlife Service for technical assistance in developing species management guides and in determining viable population levels.

Introduction on non-native species of plants and animals could occur if determined that there would be no adverse affect to any river values.*

Cooperative agreements for wildlife habitat improvement projects would be pursued with private landowners.*

Forage and Livestock Use

Practice - Utilization

Standard and Guideline - Allow no livestock grazing with the river canyons. Livestock grazing in keeping with Crooked River National Grassland Land and Resource Management Plan. Utilization standards would be permitted on upland plateaus.*

Where feasible, upland water sources would be developed on the plateaus for better livestock and wildlife distribution and forage utilizations.*

Scenic Resources

Practice - Visual Quality Objectives (VQO's)

Standard and Guideline - Retention

Transportation System

Practice - Operations and Maintenance

Standard and Guideline - Close all roads within the river canyons to public use year-round, allowing only administrative and permittee use.*

Reconstruct, operate and maintain access routes to developed sites, permitting low clearance (passenger car) traffic. However, public use may be seasonally discourage or restricted.

Roads on the plateaus not accessing developed sites will be maintained for high clearance vehicles.*

Motorized use on the plateaus would be limited to designated routes.*

Road closures for wildlife management would take precedence over other management area prescriptions.*

C. Cost Estimates

Management actions proposed under each alternative have been combined into five main categories for budgeting purposes. The four categories include: 1) Area/Facility Development, 2) Resource Analysis Projects, 3) Annual Operation and Maintenance, 4) Annual Program Management, and 5) Monitoring Equipment. The management intent is to implement these actions as soon as the necessary funding can be secured through the agency's budgeting process. Estimated cost figures are derived from both BLM and National Grassland funding requirements and are based on fiscal year 1992 dollar values. Refer to Table 15 for an estimated cost breakdown.

Table 15 - Cost Estimates

Area/Facility Development (1)	Cost	Agency Resp.
Road Improvements/Stabilization	$175,000	BLM,CRNG
Road Closures	25,000	BLM,CRNG
Road/Trail Easements and Acquisition	85,000	BLM,CRNG
Trail Construction/Stabilization	60,000	BLM,CRNG
Trailheads	20,000	BLM,CRNG
Campground Areas	40,000	BLM
Dispersed Facilities/Signs	9,000	BLM,CRNG
Interpretive Facilities/Signs	38,000	BLM,CRNG
Instream Structures	20,000	BLM,CRNG
Livestock Fencing/Water Sources	6,000	BLM
Wildlife Structures	4,000	BLM,CRNG
TOTAL	**$482,000**	

Resource Analysis Projects (2)	Cost	Agency Resp.
Instream Flow Studies (both rivers)	$75,000	BLM,CRNG
Water Quality Baseline Data	10,000	BLM,CRNG
Water Resource Analysis Cooperative	5,000	BLM,CRNG
Fish Habitat Inventory	15,000	BLM,CRNG
Fish Population Study	7,000	Coop w/ODFW
Riparian Baseline Data	3,000	BLM,CRNG
Upland Ecological Status Baseline Data	5,000	BLM,CRNG
Wildlife Habitat Inventory	10,000	Coop w/ODFW
Comprehensive Cultural Inventory	80,000	Coop w/Tribes
Inventory New/Proposed Use Areas	6,000	BLM,CRNG
Survey/Post Boundaries in Heavy Public Use Areas Adjacent to Private Land	10,000	BLM,CRNG
TOTAL	**$226,000**	

Annual Operation and Maintenance (3)	Cost	Agency Resp.
Road Maintenance	10,000	BLM,CRNG
Trail Maintenance	5,000	BLM,CRNG
Campgrounds	5,500	BLM
Dispersed Use Areas	5,000	BLM,CRNG
Trailheads	7,000	BLM,CRNG
Signs	4,500	BLM,CRNG
Interpretive Devices	6,000	BLM,CRNG
Private Land Interface	5,000	BLM,CRNG
TOTAL	**$48,000**	

Annual Program Management (4)	Cost	Agency Resp.
Resource Management (monitoring resources as described in the monitoring section)	$35,000	BLM,CRNG
Information and Education Program	20,000	BLM,CRNG
Volunteer Program	4,000	BLM,CRNG
Vehicle Costs	3,000	BLM,CRNG
Equipment Charges	5,000	BLM,CRNG
Fire Suppression	25,000	BLM,CRNG
Law Enforcement	12,000	BLM,CRNG
Commercial Recreation	2,000	BLM,CRNG
Coordination with Other Agencies and Publics	10,000	BLM,CRNG
TOTAL	**$116,000**	

Monitoring Equipment (5)	Cost	Agency Resp.
Water Quality Monitoring Equipment	$10,000	BLM,CRNG
Fish Habitat Survey Equipment	2,500	BLM,CRNG
Recreation Use Monitoring Equipment	5,000	BLM,CRNG
Miscellaneous Equipment	8,000	BLM,CRNG
TOTAL	**$25,500**	

1) Costs related to survey, design, and construction are included in these figures.

2) This category includes resource analysis projects necessary before effective monitoring and resource protection can occur. These estimated figures include administration, labor and contract costs associated with the projects.

3) This category includes administration and labor costs associated with maintenance of facilities within the river corridors.

4) Funding for annual program management includes a variety of elements. The elements described are the most important tools necessary for yearly program management of the river corridors. Administrative costs associated with annual program management are included in these figures.

5) This category includes equipment necessary to govern implementation of the Middle Deschutes/Lower Crooked River Management Plan.

D. Monitoring Plan

The monitoring prescribed in this plan is in addition to the monitoring standards established in the Brothers/LaPine Resource Management Plan and Crooked River National Grassland Land and Resource Management Plan. It expands these RMP's to address resource specific issues of the Middle Deschutes/Lower Crooked River Management Plan.

The monitoring and evaluation of this plan will be based, whenever possible, upon the Limits of Acceptable Change concept (LAC). LAC is based on the premise that change to the ecological and social conditions of an area will occur as a result of natural and human factors. The goal of management is to keep the character and rate of change due to human factors within acceptable levels that are consistent with plan objectives and protection of the river's outstandingly remarkable values.

The primary emphasis of the LAC system is on the desired resource condition, rather than on how much use or abuse an area can tolerate. The management challenge is not one of how to prevent any human-induced change in the planning area, but rather one of deciding what changes should occur, how much change will be allowed, what management actions are needed to guide and control it, and how managers will know when the established limits are being or have been reached.

Once in place and functioning, the mechanics of the LAC system can alert the managing agencies to unacceptable change in the river corridor before it is too late to react. For each river value to be monitored, one or more key indicators are selected which allow managers to keep attuned to changes in the ecosystem or social setting. For each key indicator, a standard is set. This is the threshold value which determines the amount of change that is either desired or will be accepted. The purpose of the indicators and standards is to provide managers with a tool to determine if the resource values and opportunities they are managing for are actually being provided. The standards serve as "triggers" which cause predetermined management actions to be implemented when the limit is being approached.

The LAC process is designed to be the foundation for the long-term protection and enhancement of the primary river-related values in the river corridor. The process must, however, be flexible enough to allow for unique site-specific situation, and to provide ample opportunity for public involvement and adjustment as our resource and social knowledge base increase.

The following section outlines the key indicators, management standards, and monitoring that will be conducted on the Middle Deschutes and Lower Crooked Wild and Scenic River corridors.

Campground hosts and other volunteers frequently contribute time and effort to help the agencies monitor resources

Value to be Maintained and Enhanced	Key Indicator	Management Standard to be Used	Management Actions Triggered if Standard is Not Met	Sampling Procedure and Frequency
Water Quality	Fecal Coliform	A log mean of 200 fecal coliform per 100 milliliters based on a minimum of one sample per 30-day period with no more than 10 percent of the samples in a one year period exceeding 400 per 100 ml.	Identify possible sources of effluent. Work with counties and DEQ to prepare plan for corrective action.	Fecal Coliform grab samples taken to a State-Certified lab; samples taken in spring, summer, and fall on a yearly basis.
	Temperature	Temperature equal to or cooler than 58 degrees or natural water temperature established through baseline monitoring.	Correct management practices that may be contributing to temperature rise.	Monitor temperatures with continuously recording temperature instruments.
	Turbidity	No more than 10 percent increase in natural stream turbidity as established through baseline monitoring.	Correct management practices that may be contributing to turbidity rise.	Monitor turbidity with a automatic water sampler. Samples taken during flushing flows in fall, winter, spring, and during June, July, and August on a yearly basis.
	pH	Maintain pH between 6.5 and 8.5	Correct management practices that may be contributing to pH rise.	Monitor pH with an automatic water sampler instrument the same frequency as in turbidity.
	Dissolved Oxygen	Maintain dissolved oxygen equal to or greater than 5.0 mg./l.	Correct management practices that may be contributing to a reduction in dissolved oxygen. Negotiate for an increase in flow.	Monitor dissolved oxygen with an automatic water sampler instrument weekly during June, July, and August.

Value to be Maintained and Enhanced	Key Indicator	Management Standard to be Used	Management Actions Triggered if Standard is Not Met	Sampling Procedure and Frequency
Fish Habitat	Quality and Quantity of Spawning Gravel	Locate areas and measure substrate embedeness and frequency distribution during 1993. Maintain desired quality and quantity of spawning gravel established during baseline monitoring in 1993.	Identify cause of degradation to quality and quantity of spawning gravel and mitigate impact.	Conduct yearly substrate embedeness and pebble count for 5 years, then every 3 years thereafter.
	Rearing Habitat	Maintain pool and habitat quality and quantity at desired levels established during baseline monitoring in 1993.	Identify cause of degradation to rearing habitat and mitigate impact.	Conduct annual habitat survey for 5 years, then every 3 years thereafter.
	Fish Species Composition	Maintain fish species composition using baseline data from ODFW.	Coordinate with ODFW to identify actions that may degrade fish species composition and assist in mitigation.	Coordinate with ODFW to assist in annual fish census.
Riparian Vegetation	Proper functioning ecological condition as indicated by vegetative and streambank condition.	Riparian vegetation would be managed to maintain or enhance vegetative diversity, biomass, and percent cover at desired level determined during baseline monitoring. Obtain 100 percent of shade potential and maintain cutbanks at natural levels as established during baseline monitoring.	Remove/eliminate source of impact (ie. close campsite, roads, trails, etc.) after inventory assesses the extent of impact.	Conduct riparian resource inventory and photo inventory (infra-red) every 3 years for the next 10 years. Thereafter, conduct every 5 years.

Value to be Maintained and Enhanced	Key Indicator	Management Standard to be Used	Management Actions Triggered if Standard is Not Met	Sampling Procedure and Frequency
Upland Vegetation	Ecological condition and trend as indicated by the composition of western juniper, sagebrush, idaho fescue, and bluebunch wheatgrass.	Upland vegetation would be managed to maintain ecological condition between mid and late seral status. Early seral conditions would be provided as necessary to provide habitat for animal species dependent upon this ecological status.	Utilize a combination of prescribed fire, mechanical vegetation strategies, and mosaic juniper thinning strategies that result in reaching the management standard. Short-term spot grazing and chemical management strategies would be used when no other vegetation management tools are effective.	Conduct ecological site inventory using trend plots in differing ecological communities on all public lands every 3 years. Monitor vegetative management strategies to determine if they successfully achieve the management standard.
Wildlife	River corridor use by Golden Eagle, Prairie Falcon, and Red-tailed Hawk.	Maintain raptor occupancy rates within baseline established in 1992 raptor inventory. Protect active bird of prey nests from human disturbance until nesting, feeding, and fledging are completed. Provide protection of nest sites and nesting habitat sufficient for species involved.	If raptor occupancy rates fall below 10 percent of 1992 baseline, consult with raptor experts to re-evaluate river management practices.	Conduct raptor inventory to monitor nest occupancy rates and species composition every 5 years. Monitor 10 selected Golden Eagle nest sites yearly.
	Amount of cliff, cave, and talus habitat in river corridors and use by associated species.	Historic records compared with future observations should not indicate downward trends. Maintain the existing amount of cliff, cave, and talus habitat presently available.	If loss of cliff, cave, or talus habitat occurs, provide an off-site mitigation plan.	Inventory cliff, cave, and talus habitats in cooperation with ODFW every 2 to 3 years. Associated species will be surveyed during project evaluations.

Value to be Maintained and Enhanced	Key Indicator	Management Standard to be Used	Management Actions Triggered if Standard is Not Met	Sampling Procedure and Frequency
Threatened, Endangered, and Sensitive Plant Species	Number of flowering plants	Detect no more than 30 percent decrease in population numbers with a 90 percent confidence.	Correct or mitigate management practices that may be contributing to a decline in threatened, endangered, or sensitive plant species.	Conduct plant population surveys of high probability sites during each specific species flowering period every 5 years.
Cultural Resources	Cultural Site Integrity	No significant Cultural Resource which is being irreparably damaged by human use or eroded by natural forces to the point that it is in danger of being lost will be acceptable.	Public information and education efforts through brochures, signs, kiosks, and visitor contact points will be implemented. Projects with ground disturbing activities or sites experiencing natural degradation would be relocated or stabilized if possible. Project cancellation or mitigating measures would take place where relocating a planned project is not feasible. Conduct a comprehensive inventory of both river canyons to identify high probability sites.	Conduct an inventory to identify prehistoric and historic sites or features in areas proposed for surface disturbing projects as needed. Each managing agency would maintain a cultural resources database atlas for lands under there jurisdiction. Monitor high probability sites every 2 years for signs of looting or vandalism.

Value to be Maintained and Enhanced	Key Indicator	Management Standard to be Used	Management Actions Triggered if Standard is Not Met	Sampling Procedure and Frequency
Scenic Resources	Projects or modifications which significantly alter landform, vegetation, water, color, or character of the corridor.	Contrasts created by new management activities would not be allowed if they attract the attention of the casual observer within the characteristic landscape. Short-term impacts such as those created by trail building or prescribed fire would be allowed. Outstandingly remarkable scenic values will be preserved.	Management actions on public lands not consistent with Visual Resources Management (VRM) and Recreation Opportunity Spectrum objectives will be modified or rejected. Coordinate efforts with Oregon State Parks to insure compliance is occurring on private lands within the Middle Deschutes State Scenic Waterway.	Conduct a VRM study every 5 years to ensure projects and other human caused modifications are consistent with management standards. Individual projects will be analyzed on a case-by-case basis to ensure protection of outstandingly remarkable values. Monitor the number and type of private land use permits being analyzed by State Parks as well as Deschutes and Jefferson counties. This would occur by supporting these agencies through the review process.
Recreation	Quality Experience	Maintain or enhance visitor experience using 1991 baseline data derived from the 1991 visitor use survey. No more that 2 campsites will be visible from other campsites in the river canyon in semi-primitive non-motorized areas. During all use periods, there should be no more than 10 other groups encountered per day in semi-primitive non-motorized areas, except in the Steelhead Falls area.	Develop brochures to inform and educate visitors how to avoid peak use periods and reduce conflicts with other recreationists. High impact recreation opportunities would be limited to specific geographic areas or excluded if found to significantly impact other visitors or the resource. Limit length of stay to 7 nights in developed and dispersed campgrounds. If necessary, recommend management changes to other managing agencies (ie. ODFW fishing regulations).	Conduct a visitor use survey every 3 years. Focus on use levels, conflicts, and user need. Coordinate with ODFW to conduct an angler preference and statistical creel survey as needed to analyze fishing regulations.

Value to be Maintained and Enhanced	Key Indicator	Management Standard to be Used	Management Actions Triggered if Standard is Not Met	Sampling Procedure and Frequency
Roads/Trails	Road erosion and damage related to roadside vegetation and facilities.	Confine motorized vehicles to designated roads. Maintain roads to established federal standards.	Increase road maintenance frequency. Reconstruct/relocate roads and related facilities (ie. signs, vehicle barriers, etc.) to resolve unlawful access, resource damage, and road safety problems.	Monitor routine road maintenance needs yearly. Utilize feedback from visitor contact.
	Trail erosion and damage related to trailside vegetation and facilities.	Maintain trails to established federal standards. Prevent trail networking using indirect methods. Trail use and design will be in keeping with Recreation Opportunity Spectrum (ROS) experience level and visual management standards.	Increase trail maintenance frequency. Reconstruct/relocate trails to reduce trail networking and encourage appropriate use. Keep trail maps current.	Monitor routine trail maintenance needs yearly. Utilize feedback from routine patrols on high use trails. Establish monitoring points along high use user developed trails to measure trail depth, width, and drainage. Remeasure points every 2 years for the first 4 years, then every 3 years afterward.
Campgrounds and Dispersed Use Areas	Soil stability Vegetative loss Tree damage Facility damage Litter Accumulation	Impacts to campgrounds and dispersed use areas (trailheads, etc...) will range between light and heavy based on subjective judgement regarding erosion, vegetative change, facility damage, and accumulation of litter as follows: Light: Previous ground vegetation intact allowing natural erosion to occur. Facility damage and litter is not evident. The site has experienced only minimal physical changes. Moderate: Vegetative growth is somewhat retarded allowing minor abnormal erosion to occur. Traces of litter can be found within and adjacent to the site. Minor vandalism, repairable by maintenance, is occurring on facilities such as tables. Physical changes to the site could include: minor tree limbing, movement of rocks and semi-stationary facilities.	Using basic site protection measures, harden all sites to maintain sites between light and heavy standards. Campsites which have received extreme impacts will be rehabilitated and closed until levels of impacts have been mitigated to at least moderate. Other actions could include: increased user education efforts in "minimum impact" camping techniques and seasonal closures of entire campgrounds or dispersed use areas if determined necessary.	Inventory all existing and new proposed sites within the river corridor upon approval of this plan. Remeasure all sites once every 3 years, or when changed conditions indicate the need. Feedback from routine campsite maintenance patrols.

Value to be Maintained and Enhanced	Key Indicator	Management Standard to be Used	Management Actions Triggered if Standard is Not Met	Sampling Procedure and Frequency
Campgrounds and Dispersed Use Areas (cont)		Heavy: Use area vegetation is gone but adjacent vegetation still intact. Abnormal erosion within the site is correctable through maintenance. Major littering is evident within and adjacent to the site and can be corrected through maintenance. Major vandalism, repairable by maintenance, is occurring on facilities and physical features such as tables, rocks, trees and other site protection facilities. Physical changes to the site could include: moderate tree limbing, beginning tree root exposure, trails radiate from site, human caused changes to the layout of the use area. All impacts to camp and dispersed use areas could be resolved through routine maintenance. Extreme: Use area vegetation is gone and adjacent vegetative growth is retarded allowing abnormal erosion to occur within and adjacent to the site. Maintenance can no longer correct soil and vegetative impacts without allowing for temporary closure of the site. The site experiences perpetual littering. Major vandalism can be corrected through maintenance of facilities but not for vandalism to physical features such as rocks, trees and other features. Physical changes to the site could include: dead or cut trees, tree roots exposed, heavy erosion, compacted soil restricting reestablishment of indigenous vegetation within and adjacent to the site, changes in species composition, major trails and satellite areas radiate from site. Maintenance can no longer correct impacts and the site can no longer sustain long-term use without temporary closure to allow natural rehabilitation to occur.		

VI. Oregon Scenic Waterway Program

A. Background

The Oregon Scenic Waterway Act was established by a ballot initiative in 1970. The original Oregon Scenic Waterways system created by the Act included 496 free-flowing miles of six rivers.

Rivers can be added to the system through designation by the Governor or the legislature. Such actions have added significant mileage of five rivers, as well as Waldo Lake, to the Scenic Waterways system since passage of the original Act.

Rivers can also be added to the system by the citizens of Oregon. In 1988, Oregon voters passed the Oregon Rivers Initiative (Ballot Measure #7), which added 573 river miles to the system. These additions included the segments of the Middle Deschutes River from Robert Sawyer Park to Tumalo State Park, and Deschutes Market Road to Lake Billy Chinook. There are now one lake and segments of 19 rivers (1,148 miles), in the State Scenic Waterways system.

B. Program Goals

The scenic waterway program promotes cooperative protection and wise use of rivers in the system by all agencies (federal, state and local), individual property owners and recreation users. Five general program goals include:

1. To protect the free-flowing character of designated rivers for fish, wildlife and recreation. No dams, reservoirs, impoundments or placer mining activities are allowed on scenic waterways.

2. To protect and enhance scenic, aesthetic, natural, recreation, scientific, fish and wildlife values along scenic waterways. New development or changes of existing uses proposed within a scenic waterway are reviewed before they may take place.

3. To protect private property rights. The Act discourages unsightly structures or inappropriate development that could be a nuisance to neighboring landowners and/or even depreciate property values. It prohibits pollution and the disturbance of adjacent surface lands by placer mining. It also prohibits public use of private property without explicit consent of the landowner.

4. To promote expansion of the scenic waterway system. The Act sets up a process for adding new rivers to the system and establishes criteria for candidate rivers.

5. To encourage other local, state and federal agencies to act consistently with the goals of the program. Oregon State Parks reviews plans and decisions made by other agencies to ensure consistency with the scenic waterways program.

C. Administration

Scenic waterways are administered under the authority of the Oregon State Parks and Recreation Commission (ORS 390.805 to ORS 390.925). Administrative rules (OAR 736-40-005 to 736-40-095) have been adopted to govern the program (see Appendix C). In addition to the general rules governing the program, specific rules are generated for management of each river segment in the system. These rules are created through the management planning

process, and tailored to the actions necessary to maintain the existing character of the designated river corridor.

The Act and the Commission's rules require the evaluation of proposed land use changes within one-quarter mile from the ordinary high water line, on each side of the river, for their potential impacts on the special attributes of the river. Property owners wanting to build roads or houses, extract minerals and aggregate, harvest timber, or other similar projects, must provide written notification to the Oregon State Parks and Recreation Department. Parks evaluation of the project will be coordinated with other natural resource agencies (federal and state) having regulatory responsibility and with the local jurisdiction. Parks relies on its river classification and administrative rules for each segment of the scenic waterway to determine whether the proposed project is incompatible or inconsistent with the designated classification. State Parks will work with the landowner to reach a resolution of conflicts. Where such resolution cannot be reached, the Commission must decide within one year of the original notification whether to pay the property owner for the land or the development rights. If the Commission does not decide within one year to acquire the land or development rights, then the landowner may proceed in accordance with the original development proposal.

Other local, state, and federal agencies must comply with the scenic waterway law and rules. Parks coordinates the program with other state and federal agencies to assure their actions are compatible with scenic waterway Act,

Rim developments on the Middle Deschutes are regulated by State Parks as well as Deschutes and Jefferson counties

administrative rules and resource management plans.

D. The Management Planning Process

The goal of the scenic waterway management planning process is to develop a comprehensive and workable management plan which will protect or enhance the special attributes of the designated river corridor. Primary emphasis is the protection of aesthetic, scenic, fish and wildlife, scientific, and recreational features.

The intent is to maintain the existing scenic condition of the area, without "turning back the clock" on existing land uses. The mechanisms for protection and enhancement include:

River Classification - Within the management plan, scenic waterways are classified into one or more of six possible classifications, according to the character of the landscape and the amount and type of development.

Administrative Rules - Once the classifications are set, specific guidelines for new development are established as land management rules.

Other Managment Recommendations - These are suggestions for actions to protect corridor values, to be implemented by persons or agencies other than State Parks.

E. Scenic Waterway Classification

Under Oregon law (ORS 390.845 - Functions of the department; use of adjacent lands), the scenic waterway program is administered by the State Parks and Recreation Commission, and staffed the Oregon State Parks and Recreation Department. The Parks Department is required to protect the aesthetic, scenic, fish and wildlife, scientific and recreation features based on special attributes of each river. The Parks Department strives to protect special attributes of the river while recognizing existing land uses and management practices on adjacent lands.

In order to define and achieve managment goals, the river is classified into one or more of six possible classifications according to the present level of land development, committed land uses, or landscape alterations. Once the classifications are set, appropriate guidelines for new development or landscape alterations are established as rules. The major aim of the program is to maintain the existing scenic condition of the river.

The following are existing land use and land alteration conditions usually associated with each of the six river classifications; and how each kind of classification should be administered (managed) in scenic waterways:

1. **Natural River Areas** are generally inaccessible except by trail or river, with primitive or minimally developed shorelands. Preservation and enhancement of the primitive character of these areas is the goal of this and the next two classifications.

2. **Accessible Natural River Areas** are relatively primitive, undeveloped areas with access by railroad or lightly traveled road.

3. **Natural Scenic View Areas** are designated where one riverbank is inaccessible, undeveloped or primitive in character while the opposite bank is accessible and developed.

4. **Scenic River Areas** may be accessible by roads, but are largely undeveloped and primitive except for agriculture and grazing. River segments considered "Scenic" are managed to maintain or enhance their high scenic quality, recreation value, fishery and wildlife habitat. The intent is to preserve their largely undeveloped character while allowing continued agricultural land use.

5. **Recreational River Areas** are readily accessible by road or railroad, with some agricultural, commercial and/or residential development along the banks; the river may have undergone some impoundment or diversion in the past. River segments considered "Recreation" are managed to allow continuance of compatible river-oriented public outdoor recreation opportunities, to the extent that these do not substantially impair the natural beauty of the scenic waterway or diminish its aesthetic, fish and wildlife, scientific and recreational values.

6. **River Community Areas** are river segments where the density (residential tract or platted subdivision) of existing structures or other developments precludes application of a more restrictive classification. River segments considered "Community Areas" are managed to allow development that is compatible with county zoning and blends into the natural character of the surrounding landscape. This also means protecting riparian vegetation, and encouraging activities that enhance the landscape.

The rules established for each river classification generally allow some new construction and continued use of existing structures and improvements. Though some improvements require notification, review and approval, many others do not. For example, notification and approval is not generally needed for construction of new fences; maintenance of farm buildings, fences or outbuildings; laying of irrigation lines; crop rotation; removal of danger trees; construction of grain storage facilities under certain conditions; maintenance of existing residences and outbuildings; minor residential remodeling; construction of garage adjacent to existing homes; certain changes in homesite landscaping; maintenance of roads and bridges; and firewood cutting for personal use.

Mining, road building, construction of most new structures, placement of mobile homes, land clearing and timber harvest are examples of activities requiring approval. River classifications and the associated rules or guidelines determine how the natural and scenic beauty of the river will be maintained.

F. Middle Deschutes Scenic Waterway Land Management Program

Proposed Classifications

The Oregon State Parks and Recreation Department proposes to apply four classifications to given segments of the Middle Deschutes Scenic Waterway. Classification locations and explanations for why each is applied to river segments are provided below:

1. **River Community Areas**

A. From Sawyer Park at approximately river mile 164 to the northern Urban Growth Boundary of the City of Bend at approximately river mile 161, the river is classified *North City of Bend River Community Area*. Except for Sawyer Park, this entire segment is in private ownership with river access limited to the park. Downstream of the park, numerous developments are very prominent, some encroaching over the edge of the rimrock. Adjacent to the west side of the river an irrigation flume maintenance road is visible as are subdivision and public roads.

The management goal is to allow development that is compatible with City of Bend and Deschutes County zoning and ensure that any new developments are unobtrusive.

B. From approximately river mile 130.5 to 131.7, the river is classified *Crooked River Ranch River Community Area*. This segment in Jefferson

County contains the Crooked River Ranch development. Crooked River Ranch is an unincorporated residential development of over 2,260 individual parcels. The Ranch features a golf course, extensive road system and utilities.

The management goal is to allow development that is compatible with Jefferson County zoning and ensure that any new developments are unobtrusive.

2. Recreational River Areas

From the northern Urban Growth Boundary of the City of Bend at approximately river mile 161 downstream to Tumalo State Park at approximately river mile 158, the river is classified *Recreational River Area.* Private development surrounds Tumalo State Park and developments are prominent along the canyon rim. Access to the river in the first mile is limited to private ownership and steep terrain. Access is available in the lower segment because of public ownership and a river trail.

The management goal is to preserve the area's recreational quality and ensure that any new developments blend into the natural character of the surrounding landscape.

3. Scenic River Area

A. From Deschutes Market Road at approximately river mile 157 downstream to the south boundary of the Wilderness Study Area at approximately river mile 131, excluding the Cline Falls dam and powerhouse section, the river is classified *Scenic River Area.* Between Deschutes Market Road and Lower Bridge much of the riverfront land is privately owned. This area has been developed or subdivided into parcels in sizes ranging from 1/2 acre to 5 acres. The Bureau of Land Management manages land near Awbrey Falls at approximately river mile 152.6 as defined in the Brothers/ LaPine Resource Management Plan. Other Public lands located within the National Wild and Scenic River corridor will be managed as defined by the overall management plan.

Used mostly for recreation and grazing, the area within the canyon is unimproved except for trails. At about river mile 146, the Eagle Crest destination resort and residential development area lies on the canyon rim west of the river and upstream from Cline Falls State Park. A trail has been constructed near the left bank of the river and the majority of residential units proposed for construction along the rim have been built. An unmaintained but well-used footpath crossing both private and public land exists on the east bank directly across from Eagle Crest. Downstream of Eagle Crest, Cline Falls State Park provides day use facilities and river access. Oregon Route 126 crosses the river on the north boundary of Cline Falls State Park. An abandoned highway bridge and the Cline Falls hydroelectric dam and powerhouse are north of Route 126. Two large subdivision tracts are downstream; Odin Falls Ranch at approximately river mile 138 and Lower Bridge Estates at approximately river mile 135. The majority of lots in these subdivisions are undeveloped.

Between Lower Bridge and the south boundary of the Wilderness Study Area large lots of privately owned land remain relatively undeveloped except for agricultural uses. An old county road runs for several hundred yards along the west bank of the river north of Lower Bridge. This section of river marks the transition zone between shallow and deep river canyon characteristics.

The management goal is to preserve the area's scenic quality by ensuring that all new developments blend into the natural character of the surrounding landscape and preserve undevel-

oped character associated with agriculture uses.

4. **Natural River Area**

From the south boundary of the Wilderness Study Area at approximately river mile 131 to the Lake Billy Chinook stream gauge at approximately river mile 120, excluding the Crooked River Ranch Community Area as described in the River Community section, the river is classified *Natural River Area.* In this eleven mile segment, the river courses through a deep canyon with multiple rimrock formations and a variety of colors and textures in the walls. Within the river canyon there are no developed recreation facilities, though hiking, fishing, hunting, and primitive camping uses are evident.

The management goal is to maintain the primitive character of the landscape.

Proposed Land Management Rules

1. **River Community Areas**

The North City of Bend River Community Area

Rule: Within this area, all new structures, improvements and development must be in compliance with the Land Management Rules as described in OAR 736-40-035, and be consistent with applicable City of Bend and Deschutes County land use and development regulations. Improvements needed for public recreation use or resource protection must be designed to blend with the natural character of the landscape.

The Crooked River Ranch River Community Area

Rule: Within this area, all new structures, improvements and development must be in compliance with the Land Management Rules as described in OAR 736-40-035, and be consistent with applicable Jefferson County land use and development regulations. Improvements needed for public recreation use or resource protection must be designed to blend with the natural character of the landscape.

2. **Recreational River Areas**

The river from the Urban Growth Boundary north of the City of Bend to Tumalo State Park

Rule: Within these areas, all new structures, improvements and development will comply with the Land Management Rules as described in OAR 736-40-035, and be consistent with Deschutes County land use and development regulations.

New structures and improvements shall be set back a minimum of 100 feet from the ordinary high water line of the river. A set back of 20' or more is required from the edge of the rim rock (where this feature exists). The exact distance for the above setbacks will be determined on a case by case basis and will be dependent on existing terrain, existing vegetation, height of proposed structure, and applicable county setback requirements.

New structures shall be finished in colors and tones that blend with the surrounding landscape. For the purposes of this rule, landscape includes indigenous vegetation, soils, and rock material. Natural evergreen vegetation will be maintained between the structures and the river. The establishment of additional vegetative screening (preferably native vegetation) may be required to further mitigate the visual impact of the structure as seen from the river.

Roads, mines and similar forms of development shall be set back from the river consistent with County zoning and land development requirements and be screened from view from the river by topography, or by existing or established evergreen vegetation.

Hydrologic features such as Big Falls at Deschutes river mile 132.3 add significantly to the scenic beauty of the river corridors

Improvements needed for public recreation use or resource protection must be designed to blend with the natural character of the landscape.

3. **Scenic River Area**

The river from Deschutes Market Road to the south boundary of the Wilderness Study Area, excluding the Cline Falls dam and powerhouse section, at approximately river mile 131.

Rule: Within this area all new structures, improvements and development will comply with the Land Management Rules as described in OAR 736-40-035 and Deschutes County land use and development regulations.

New structures and improvements shall be set back a minimum of 100 feet from the ordinary high water line of the river. A set back of 20' or more is required from the edge of the rim rock (where this feature exists). The exact distance for the above setbacks will be determined on a case by case basis and will be dependent on existing terrain, existing vegetation, height of proposed structure, and applicable county setback requirements.

New structures shall be finished in colors and tones that blend with the surrounding landscape. For the purposes of this rule, landscape includes indigenous vegetation, soils, and rock material. Natural evergreen vegetation will be maintained between the improvements and the river. The establishment of additional vegetative screening (preferably native vegetation)

will be required to further mitigate the visual impact of the structure as seen from the river.

Roads, mines and similar forms of development shall be screened from view from the river by topography. Within this area no new roads or mines will be allowed below the canyon rim.

Improvements needed for public recreation use or resource protection must be designed to blend with the natural character of the landscape.

4. **Natural River Area**

From the south boundary of the Wilderness Study Area to Lake Billy Chinook, excluding the Crooked River Ranch River Community Area.

Rule: Within this area all new structures, improvements and developments will comply with the Land Management Rules as described in OAR 736-40-035, and be consistent with applicable local land use and development regulations.

No new structures and improvements will be allowed within this area unless fully screened from view by topography except those minimal facilities needed for resource protection or public outdoor recreation.

Roads, mines and similar forms of development will be permitted only when fully screened from view from the river by topography. Any existing roads shall not be extended, realigned, or improved substantially unless fully screened by topography. All excess road construction materials (side cast) must be removed to locations screened from view from the river and where they can not be transported by gravity to the river.

New structures, improvements and development needed for resource protection or public outdoor recreation use must be primitive in character and designed to blend with the natural character of the landscape. These structures shall be finished in colors and tones that blend with the surrounding landscape. For purposes of this rule, landscape includes indigenous vegetation, soils, and rock material.

VII. Participants, References and Glossary

A. Planning Participants

Management Participation

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Dave Young, Fish Biologist, Bureau of Land Management

Middle Deschutes/Lower Crooked River Citizen Work Group

Rex Barber Jr., Agricultural and Water Rights
Barbara Butler, Oregon Natural Desert Association
Doug Dunn, Minerals, Ranching, and Private Landowners
Dave Leslie, Deschutes County Planner
Chuck McGraw, Jefferson County Planner
Dan Napier, Crooked River Ranch and Private Landowners
Ron Nelson, Central Oregon Irrigation
Eric Shultz, Trout Unlimited

Squaw Creek provides additional flow into the Middle Deschutes River near river mile 123.0

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C. Glossary

Access - The ability of recreationists to reach the areas in which they wish to recreate.

Allotment - An area of land where one or more livestock operators graze their livestock.

Alternative - A comprehensive management strategy; when a federal agency is considering an action, NEPA requires the agency to develop and analyze a range of reasonable alternatives, including a "no action" or "no change" alternative. The alternatives must respond to the issues, and must show a reasonable range of actions.

Aquatic - Living or growing in or on the water.

Archaeological Site - Geographic locale containing structures, artifacts, material remains and/or other evidence of past human activity.

Artificial Structures - Constructed cavities which provide shelter for wildlife, such as bird houses.

Basic Site Protection Measures - Engineering techniques designed to reduce or control recreation impacts. In campsites it could include natural or man-made vehicle barriers, graveled surfaces, toilets, footpaths, steps and vegetative plantings. (Also see campsite stabilization.)

Bike - A non-motorized form of transportation normally with two wheels and pedals, many are referred to as mountain bikes.

Biodiversity - The relative abundance and variety of species, both plant and animal, in a given area.

Campground - One or more developed campsites in a specific area.

Camping - Outdoor living for recreation.

Campsite - Individual unit for camping.

Campsite Stabilization - Measures taken to reduce camper impact on the natural resources, such as hardening a footpath. Also see Basic site protection measures.

Campsite Rehabilitation - Measures taken to restore damaged campsites and to prevent further damage to natural resources, such as planting grass and shrubs.

Ceded Lands - Lands and certain rights ceded to the United States of America by the Confederated Tribes of the Warm Springs under the treaty of 1855.

Compaction - The process of packing firmly and closely together; the state of being so packed, (ie. compaction of soil from intense human use or vehicular activity). Soil compaction results from particles being pressed together so that the volume of soil is reduced. It is influenced by the physical properties of the soil, moisture content, and the type and amount of compactive effort.

Crucial Wildlife Habitat - Parts of the habitat needed to sustain a wildlife population at critical periods of its life cycle. This is often a limiting factor on populations, such as breeding habitat and winter habitat.

Cumulative Effects - Effects on the environment resulting from actions that are individually minor, but that add up to a greater total effect as they take place over a period of time.

Cultural Resources - Remains of human (historical and archaeological) activity, occupation, or endeavor, reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture and natural features that were of importance in past human events. Cultural resources consist of: (1) physical remains; (2) areas where significant human events occurred, even though evidence of the events no longer remains; and (3) the environment immediately surrounding the actual resource.

Day Use Area - An area primarily set aside for day use parking, picnicking, and/or access to a variety of day use recreation opportunities.

Desired Future Condition - A vision of the desired future state of a specific area. Desired future condition gives managers goals for the area, but recognizes the dynamic state of the ecosystem, instead of listing numerical outputs as goals.

Developed Campground - Accessible by motor vehicle and contains improvements for camper comfort and sanitary facilities such as toilets, drinking water, tables and trash receptacles.

Early Seral - Ecological status that corresponds to 0 to 25 percent of the plant composition found in the potential natural community. Synonymous with poor range condition.

Ecological Status - Four classes of successional stage (or range condition) used to express the degree to which the composition of the present plant community reflects that of climax. The four classes (followed by the percentage of plant community that is climax for the site) are: Potential, Natural Community, 76-100; Late seral, 51-75; Mid-seral, 26-50 and Early seral, 0-25.

Ecosystem - An interacting system of living organisms considered together with their environment; examples include talus ecosystems or river ecosystems.

Endangered Species - A plant or animal species whose prospects for survival or reproduction are in immediate danger as designated by the Secretary of the Interior and as further defined by the Endangered Species Act of 1973, as amended.

Environmental Assessment - A concise public document that evaluates a proposal for the possibility of significant environmental impacts; the analysis is required by NEPA laws. An environmental assessment results in either a FONSI (Finding of No Significant Impact) and decision notice; or, if impacts will be significant, the agency must then go on to prepare an environmental impact statement.

Erosion - Detachment and movement of soil or rock fragments by water, wind, ice or gravity.

Fecal Coliform - A bacteria found in the human colon; a fecal coliform count is use as an indicator of fecal contamination, if any, in water.

FONSI - Finding of No Significant Impact. Required by NEPA when a federal agency prepares an environmental assessment; documents the reasons why the impacts of the proposed action are not significant, and therefore, the agency is not preparing an environmental impact statement.

Forage - All browse and herbaceous plants that are available to grazing animals including wildlife and domestic livestock.

Gray Water - Sink or other non-sewage waste water.

Ground Cover - Grasses or other plants that keep soil from being blown or washed away.

Guide - A person who provides services by leading one or more other persons in outdoor recreation activities for a fee.

Guide Permit - A license to carry out the activities of a guide.

Habitat - The area where a plant or animal lives and grows under natural conditions. Habitat consists of living and non-living attributes, and provides all requirements for food and shelter.

Historic Site - Locales used by immigrants from the 1820's to 1930's.

Impact - A change in the environment caused by the activities of humans.

Issue - A subject or question of widespread public discussion or interest regarding management of a geographic area which has been identified through public participation.

Late Seral - Ecological status corresponding to 51 to 75 percent of the plant composition found in the potential natural plant community. Synonymous with good range condition.
Launch Site - The riverbank location where boats are placed in or removed from the river.

Limits of Acceptable Change - A process for establishing acceptable and appropriate conditions based on the premise that change to the ecological and social conditions of an area will occur as a result of natural and human factors. The goal of management is to keep the character and rate of change due to human factors within acceptable levels.

Major Site Protection Measures - Engineering techniques designed to physically restrict use to control recreation impacts. In campsites it could include natural or man-made vehicle barriers, graveled or asphalt surfaces, toilets, tent pads, footpaths, steps and vegetative plantings on a much larger scale than basic site protection measures. (Also see campsite stabilization.)

Management Objectives - Parameters or goals to be used as standards to measure the success of the management plan.

Management Plan - A plan guiding overall management of an area administered by a federal or state agency; plan usually includes objectives, goals, management actions, and monitoring plans.

Mid-Seral - Ecological status that corresponds to 26 to 50 percent of the composition found in the potential natural plant community. Synonymous with fair range condition.

Minimum Instream Flow - Flows on the Lower Crooked River released beyond the North Unit Irrigation Canal diversion are required by law to be at least 10 cubic feet per second. This minimum flow was established to help protect instream resources such as fish and aquatic habitat.

Mitigation - Steps taken to avoid or minimize negative environmental impacts. Mitigation can include: avoiding the impact by not taking a certain action; minimizing impacts by limiting the degree or magnitude of the action; rectifying the impact by repairing or restoring the affected environment; reducing the impact by protective steps required with the action; and, compensating for the impact by replacing or providing substitute resources.

Monitoring - The orderly collection of data to evaluate the effects or changes that result from management actions.

Multiple Use - The harmonious use of land or water resources for more than one purpose.

National Register of Historic Places (NRHP) - The official list, established by the Historic Preservation Act of 1966, of the nation's cultural resources worthy of preservation.

National Environmental Policy Act - Commonly known as NEPA; became law in 1969. NEPA is the basic national charter for protection of the environment. The Act requires all federal agencies to consider and analyze all significant environmental impacts of any action proposed by those agencies; to inform and involve the public in the agency's decisionmaking process; and to consider the environmental impacts in the agency's decisionmaking process.

National Wild and Scenic Rivers System - A system of Congressionally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural and/or other values and are preserved in a free-flowing condition. The system is of three types: (1) Recreation—rivers or sections of rivers readily accessible by road or railroad that may have some development along their shorelines and that may have undergone some impoundment or diversion in the past; (2) Scenic—rivers or sections of rivers free of impoundments, with shorelines or watersheds still largely undeveloped but accessible in places by roads; and (3) Wild—rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.

Native Species - Plants or animals that are indigenous to an area.

Non-Commercial - Activities in which there is a bona fide sharing of the cost of the activity between all participants.

No-Trace Camping - The art of camping without leaving signs of use.

Noxious Weed - A plant specified by law as being especially undesirable, troublesome and difficult to control.

Off-Highway Vehicle (OHV) - Any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding (1) any nonamphibious, registered motorboat; (2) emergency vehicles; and (3) vehicles in official use.

Outfitter - A person who for compensation or other gain, provides equipment, supplies or materials for the conduct of outdoor recreational activities.

Outstandingly Remarkable Values - Term used in the National Wild and Scenic Rivers Act of 1968; to qualify as outstandingly remarkable, a resource value must be unique, rare, or exemplary feature that is significant at a regional or national level.

Permittee - One who holds a license to use public lands or waters for financial gain.

Plan Objectives - Guiding statements or goals that present the purposes and overall intent of the planning effort.

Planning Area - The Lower Crooked River and its immediate environment within the National Wild and Scenic Rivers boundary between Bowman Dam and Highway 27 mile marker 12.

Potential Natural Community (PNC) - The final or stable biotic community in a successional series. Usually self-perpetuating, it corresponds to 76 to 100 percent of the plant composition found in the potential natural plant community. Synonymous with excellent range condition.

Prehistoric - The period of time before written records.

Public Lands - For the context of this document, public lands represents any land and interest in land managed by the State or the United States Government. Within the corridors these lands encompass Bureau of Land Management, U.S. Forest Service (National Grasslands), and state lands managed by Oregon Department of Fish and Wildlife. Management of Deschutes and Jefferson county public lands within the wild and scenic river corridors is not included within this document. Management of these county lands will be as defined in their revised comprehensive plans.

Recreation Opportunity Spectrum - A framework for understanding and defining various classes of recreation environments, activities, and experiences. The classes are defined in terms of the opportunities to have different kinds of experiences; examples are "roaded natural" and semi-primitive.

Resident Fish - Fish species that complete their entire life cycle in freshwater; non-anadromous fish; an example is rainbow trout.

Resource Assessment - An evaluation of the resources and values associated with a wild and scenic river and the river corridor; the evaluation determines the level of significance of river-related values.

Right-of-Way - A permit or easement which authorizes a specific use of a specific area of land.

Riparian Area - The land adjacent to water, where water, soil and vegetation interact to form a unique microclimate.

Roaded Natural - One category on the recreation opportunity spectrum (ROS). "Roaded Natural" describes an environment where natural characteristics remain dominant, but there is moderate evidence of human development, and moderate amounts of contact with other people is expected during recreation.

Scoping - The process by which significant issues relating to a proposal are identified. It includes eliciting public comment, evaluating concerns and developing issues and alternatives for consideration.

Sediment - Soil, rock particles and organic or other debris carried from one place to another by wind, water or gravity.
Sedimentation - A process where material carried in suspension by water flows into streams and rivers, increasing turbidity and eventually settling to the bottom.

Semi-Primitive Non-Motorized - One category on the recreation opportunity spectrum (ROS). "Semi-Primitive Non-Motorized" describes an environment where the natural environment dominates the characteristics of the area and development is very limited. Motorized use is prohibited and interaction among users is low.

Special Status Species - A threatened, endangered or sensitive plant or animal species.

Stewardship - The exercise of responsible care of land, water or other natural resources, or recreational resources such as a campsite.

Succession - The process of vegetative community change towards climax or potential natural community.

Threatened Species - A plant or animal species the Secretary of Interior has determined to be endangered in the foreseeable future throughout all or most of its range.

Treaty Rights - Legal rights of the Confederated Tribes of the Warm Springs Indians, established in their treaty with the United States Government in 1855.

Turbidity - A measure of water clarity.

Upland - All rangelands other than riparian or wetland areas.

Vegetative Manipulation - Alteration of present vegetation using fire, plowing or other means to manipulate natural successional trends.

Visual Resources Management (VRM) - VRM has dual program purposes: to manage the quality of the visual environment, and to reduce the visual impact of development activities while maintaining the effectiveness of the management plan objectives. It is a specific process that can be mapped and incorporated into design planning for projects ranging from prescribed burning to campground development.

Water Quality - The chemical, physical and biological characteristics of water with respect to its suitability for a particular use.

Watershed - Lands which are enclosed by a continuous hydrologic drainage divide and located upslope from a specified point on a stream.

Wild and Scenic River - Those rivers or sections of rivers designated as Wild an Scenic by Congressional action, either under the 1968 Wild and Scenic Rivers Act, or under supplements and amendments to that act. The Lower Crooked (Chimney Rock Segment) is one of 40 river segments designated in the Omnibus Oregon Wild and Scenic River Act 1988.

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Appendix A

Middle Deschutes/Lower Crooked Wild and Scenic River State and Congressional Designation Information

A. The Wild and Scenic Rivers Act

An Act to provide a National Wild and Scenic Rivers System, and for other purposes. Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That SEC. **1 (a)** this Act may be cited as the "Wild and Scenic Rivers Act". **(b)** It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes. (c) The purpose of this Act is to implement this policy by instituting a national wild and scenic river system, by designating the initial components with that system and by prescribing the methods by which and standards according to which additional components may be added to the system from time to time.

Sections 2 through 17 of the Wild and Scenic Rivers Act (as amended through December 31, 1990, 101st Congress) are not included within this document. This information can be obtained at the BLM, Prineville District Office or the Ochoco National Forest Service office in Prineville.

B. Title I - Omnibus Oregon Wild and Scenic Rivers Act of 1988, Amendments to the Wild and Scenic Rivers Act, Section 102

(Senate - Congressional Record (October 7, 1988)
(House - Congressional Record (October 12, 1988)

1) Crooked, Oregon - A) The 7 mile segment from the National Grassland boundary to River Mile 8 south of Opal Spring as a recreation river to be administrated by the Secretary of the Interior.,

2) Deschutes, Oregon - D) the 19 mile segment from Odin Falls to the Upper End of Lake Billy Chinook as a scenic river to be administrated by the Secretary of the Interior.

Lower Crooked River, Oregon

Outstanding scenic values exist within this segment of river. The river also provides expert whitewater kayaking and rafting opportunities (Class IV - V) during the spring runoff period.

Deschutes River, Oregon

Outstanding scenic, recreational, cultural, geologic, wilderness, fish and wildlife as well as historic and botanical values exist in this area. The Deschutes flows through a rugged, highly scenic, steep-walled basalt canyon that increases in depth as it proceeds northward. The canyon contains outstanding scenery. Three waterfalls and a wide variety of riparian vegetation also enhance the qualities of the area. Excellent fishing opportunities exist for rainbow trout, German brown trout, Dolly Varden and kokanee.

Access is limited in the corridor due to its rugged character. No developed trails exist in the area. A portion of this river segment is located in the Steelhead Falls Wilderness Study Area. This segment contains significant cultural values which include prehistoric rock art sites, rock shelters and a historic river crossing. Unusual botanical values such as the Estes wormwood which is not known to occur anywhere else in the world is located in the area.

C. Oregon State Scenic Waterway Program

In 1987, the State of Oregon adopted the Upper Deschutes River Oregon Scenic Waterway Study which designated the section of the river from Twin Bridges to Lower Bridge as a Scenic River Area, and the section from Lower Bridge to Lake Billy Chinook as a Natural River Area, with the exception of the 108 platted lots within Crooked River Ranch. The Crooked River Ranch development is classified as the Crooked River Ranch River Community Area.

In 1988, Oregon voters passed the Oregon Rivers Initiative which added two segments to the Upper Deschutes River Scenic Waterway. These segments are 1) Robert Sawyer Park to Tumalo State Park, and 2) Deschutes Market Road to Twin Bridge. These new segments are being managed under interim management rules and guidelines, developed by the Oregon State Parks Department with direction from the Oregon Scenic Waterway Act (ORS 390.805), the Scenic Waterway Administrative Rules (OAR 736-40). Parks Department policies, and other agency administrative rules. Final river classification will be determined as a result of the final BLM/USFS/State Park joint management plan.

Appendix B

Middle Deschutes/Lower Crooked Wild and Scenic River Boundary Legal Description

Lower Crooked River

Legal description of the proposed boundary commencing at the National Grassland boundary and extending downstream to River Mile 8 south of Opal Springs. Refer to Appendix F for visual representation of boundary legals.

T. 13 S., R. 13 E., W. M.

Section 32:

Beginning at the southwest 1/16 corner of section 32, thence westerly to the south 1/16 corner common to sections 31 and 32.

Section 31:

Thence northwesterly to the center east 1/16 corner, thence westerly to the center west 1/16 corner, thence northwesterly to the 1/4 corner on the east line of section 36, T. 13 S., R. 12 E., W. M.

T. 13 S., R. 12 E., W. M.

Section 36:

Thence northerly to the west section corner common to sections 30 and 31, T. 13 S., R. 13 E., W. M.

T. 13 S., R. 13 E., W. M.

Section 30:

Thence northeasterly to the center west 1/16 corner, thence northerly to the west 1/16 corner common to sections 19 and 30.

Section 19:

Thence continuing northerly to the southwest 1/16 corner, thence northeasterly to the center 1/4 corner, thence northwesterly to the north 1/16 corner on the west section line of section 19, thence northerly to the section corner common to sections 18 and 19 on the east line of section 24, T. 13 S., R. 12 E., W. M.

T. 13 S., R. 12 E., W. M.

Section 24:

Thence continuing northerly to the east section corner common to sections 13 and 24.

Section 13:

Thence continuing northerly to the 1/4 corner on the east section line of section 13, thence westerly to the center 1/4 corner, thence northerly to the center north 1/16 corner, thence westerly to the north 1/16 corner common to sections 13 and 14.

Section 14:

Thence continuing westerly to the northeast 1/16 corner, thence northwesterly to the 1/4 corner common to sections 11 and 14.

Section 11:

Thence continuing northwesterly to the 1/4 corner common to sections 10 and 11, thence northerly to the section corner common to sections 2, 3, 10, and 11.

Section 3:

Thence northwesterly to the southeast 1/16 corner, thence westerly to the southwest 1/16 corner, thence northerly to the center west 1/16 corner, thence westerly to the 1/4 corner common to sections 3 and 4.

Section 4:

Thence northerly to the north 1/16 corner common to sections 3 and 4, thence westerly to the north 1/16 corner common to sections 4 and 5, thence southeasterly to the west 1/16 corner common to sections 4 and 9.

Section 9:

Thence southeasterly to the 1/4 corner common to sections 9 and 10.

Section 10:

Thence northeasterly to the center north 1/16 corner, thence southerly to the center south 1/16 corner, thence easterly to a point 200 feet west of the lower rimrock of the Crooked River Gorge, elevation approximately 2,400 feet, thence southeasterly on a line 200 feet southwesterly and parallel to said rimrock to the intersection with the section line common to sections 10 and 15.

Section 15:

Thence continuing southeasterly on a line 200 feet southwesterly and parallel to said rimrock to the intersection of the section line common to sections 14 and 15.

Section 14:

Thence continuing southeasterly on a line 200 feet southwesterly and parallel to said rimrock to the intersection of the north south center line of the southeast 1/4 of section 14, thence southerly on said north south center line to the surveyed community area boundary of the Crooked River Ranch No. 16 Subdivision, thence easterly and southeasterly on said community area boundary to the intersection of the section line common to sections 13 and 14.

Section 13:

Thence continuing southeasterly, easterly, and southeasterly on said community area boundary to the intersection of the section line common to sections 13 and 24.

Section 24:

Thence continuing southeasterly, southwesterly, and southeasterly on said community area boundary to the east-west centerline of section 24, thence easterly on said center line to the center 1/4 corner, thence continuing easterly to a point 200 feet westerly of the lower rimrock of the Crooked River Gorge, elevation approximately 2,560 feet, thence southerly on a line 200 feet westerly and parallel to said rimrock to the intersection with the north south center line of the southeast 1/4 of section 24, thence southerly to the east 1/16 corner common to sections 24 and 25.

Section 25:

Thence easterly on the section line common to sections 24 and 25 to a point 200 feet westerly of the rimrock of the Crooked River Gorge, elevation approximately 2,600 feet, thence southerly on a line 200 feet westerly and parallel to said rimrock to the section line common to sections 25 and 36.

Section 36:

Thence westerly on the section line common to sections 25 and 36 to the surveyed line along the edge of the Crooked River Gorge as shown on the survey plat for Crooked River Ranch, Phase One, thence southwesterly and southeasterly on said survey line to the intersection with the section line common to section 31, T. 13 S., R. 13 E., and section 36, T. 13 S., R. 12 E., W. M.

T. 13 S., R. 13 E., W. M.

Section 31:

Thence southerly to the south 1/16 corner on the west line of section 31, thence southeasterly to the center south southeast 1/64 corner, thence southerly to the east 1/16 corner on the south line of section 31, thence easterly on the said section line to the south corner common to sections 31 and 32.

Section 32:

Thence continuing easterly on the south section line of section 32 to the west 1/16 corner on the south line of section 32, thence northerly to the Point of Beginning.

Middle Deschutes River

Legal description of the proposed boundary commencing at Odin Falls and extending downstream to the upper end of Billy Chinook Reservoir. Refer to Appendix F for visual representation of boundary legals.

T. 14 S., R. 12 E., W. M.

Section 26:

Beginning at the southeast southeast 1/64 corner, thence northwesterly to the center north 1/16 corner, thence westerly to the northwest 1/16 corner, thence northerly to the west 1/16 corner common to sections 23 and 26.

Section 23:

Thence continuing northerly to the southwest 1/16 corner, thence northeasterly to the east 1/16 corner common to sections 14 and 23.

Section 14:

Thence northerly to the east 1/16 corner common to sections 11 and 14.

Section 11:

Thence continuing northerly to the intersection with the southerly right-of-way boundary of Lower Bridge Market Road, thence westerly along said road right-of-way boundary to the intersection with the section line common to sections 10 and 11.

Section 10:

Thence continuing westerly along said road right-of-way boundary to the intersection with the north-south center line of the southeast 1/4 of the southeast 1/4 of section 10, thence southerly along said north-south center line to the section line common to sections 10 and 15.

Section 15:

Thence continuing southerly along the north-south center line of the northeast 1/4 of the northeast 1/4 of section 15 to the center east northeast 1/64 corner, thence westerly to the center north 1/16 corner, thence northwesterly to the section corner common to sections 9, 10, 15, and 16.

Section 9:

Thence northwesterly to the southeast 1/16 corner, thence northeasterly to the north-south 1/64 corner common to sections 9 and 10.

Section 10:

Thence continuing northeasterly to the west 1/16 corner, thence northwesterly to the north 1/16 corner common to sections 9 and 10, thence northeasterly to the 1/4 corner common to sections 3 and 10.

Section 3:

Thence northwesterly to the 1/4 corner common to sections 3 and 4, thence northerly to the north-north 1/64 corner common to section 3 and 4, thence northeasterly to the west-west 1/64 corner common to section 3, T. 14 S., R. 12 E., and section 34 T. 13 S., R. 12 E., W. M.

T. 13 S., R. 12 E., W. M.

Section 34:

Thence easterly to the west 1/16 corner common to sections 3, T.14 S., R. 12 E., and section 34 T. 13 S., R. 12 E., W. M., thence northerly to the center west 1/16 corner, thence westerly to the 1/4 corner common to sections 33 and 34, thence northerly to the section corner common to sections 27, 28, 33, and 34.

Section 27:

Thence northerly to the south 1/16 corner common to sections 27 and 28, thence easterly to the southwest 1/16 corner, thence northerly to the west 1/16 corner common to sections 22 and 27.

Section 22:

Thence easterly to the 1/4 corner common to sections 22 and 27, thence northerly to the center south 1/16 corner, thence westerly to the south 1/16 corner common to sections 21 and 22.

Section 21:

Thence northerly to the 1/4 corner common to sections 21 and 22, thence westerly to the center west 1/16 corner, thence northerly to the northwest 1/16 corner, thence westerly to the north 1/16 corner common to sections 20 and 21.

Section 20:

Thence northerly to the section corner common to sections 16, 17, 20, and 21.

Section 17:

Thence continuing northerly to the section corner common to sections 8, 9, 16, and 17.

Section 8:

Thence continuing northerly to the 1/4 corner common to sections 8 and 9, thence westerly to the center 1/4 corner, thence northerly to the center north 1/16 corner, thence westerly to the northwest 1/16 corner, thence northerly to the west 1/16 corner common to sections 5 and 8.

Section 5:

Thence continuing northerly to the center south southwest 1/64 corner, thence northeasterly to the center east southwest 1/64 corner, thence easterly to the center south 1/16 corner, thence northeasterly to the east 1/16 corner common to section 5, T. 13 S., R. 12 E., and section 32, T. 12 S., R 12 E., W. M.

T. 12 S., R 12 E., W. M.

Section 32:

Thence northerly to the east 1/16 corner common to sections 29 and 32.

Section 29:

Thence northeasterly to the south 1/16 corner common to sections 28 and 29, thence easterly to the south 1/16 corner common to sections 29 and 30, thence southerly to the section corner common to sections 29, 30, 31, and 32.

Section 31:

Thence continuing southerly to the north 1/16 corner common to sections 31 and 32, thence westerly to the center north 1/16 corner, thence southerly to the center south 1/16 corner, thence easterly to the south 1/16 corner common to sections 31 and 32, thence southerly to the section corner common to sections 31 and 32, T. 12 S., R. 12 E., and sections 5 and 6, T. 13 S., R. 12 E., W. M.

T. 13 S., R. 12 E., W. M.

Section 6:

Thence southwesterly to the southeast 1/16 corner, thence southerly to the east 1/16 corner common to sections 6 and 7.

Section 7:

Thence continuing southerly to the southwest 1/16 corner, thence southeasterly to the section corner common to sections 7, 8, 17 and 18.

Section 17:

Thence southerly to the north 1/16 corner common to sections 17 and 18, thence easterly to the center north 1/16 corner, thence southwesterly to the east west 1/64 corner common to sections 17 and 20.

Section 20:

Thence southeasterly to the center north 1/16 corner, thence easterly to the northeast 1/16 corner, thence southerly to the east 1/16 corner common to sections 20 and 29.

Section 29:

Thence continuing southerly to the northeast 1/16 corner, thence easterly to the north 1/16 corner common to sections 28 and 29.

Section 28:

Thence continuing easterly to the center north 1/16 corner, thence southerly to the center south 1/16 corner, thence southwesterly to the west 1/16 corner common to sections 28 and 33.

Section 33:

Thence southeasterly to the 1/4 corner common to sections 32 and 33, thence southerly to the section corner common to sections 32 and 33, T. 13 S., R. 12 E., and sections 4 and 5, T. 14 S., R. 12 E., W. M.

T. 14 S., R. 12 E., W. M.

Section 4:

Thence southeasterly to the center 1/4 corner, thence southerly to the center south 1/16 corner, thence southeasterly to the section corner common to sections 3, 4, 9, and 10.

Section 9:

Thence southwesterly to the northeast 1/16 corner, thence southerly to the center east 1/16 corner, thence westerly to the center east west 1/64 corner, thence southerly on the north south center line of the east half of the southwest quarter to the east-west 1/64 corner common to sections 9 and 16.

Section 16:

Thence southeasterly to the 1/4 corner common to sections 15 and 16.

Section 15:

Thence continuing southeasterly to the southwest 1/16 corner, thence northeasterly to the 1/4 corner common to sections 14, and 15.

Section 14:

Thence easterly to the center west 1/16 corner, thence southerly to the west 1/16 corner common to sections 14 and 23.

Section 23:

Thence southwesterly to the north 1/16 corner common to sections 22 and 23.

Section 22:

Thence continuing southwesterly to the center east 1/16 corner, thence southerly to the east 1/16 corner common to sections 22 and 27.

Section 27:

Thence southeasterly to the north 1/16 corner common to sections 26 and 27.

Section 26:

Thence southeasterly to the southwest southeast 1/64 corner, thence easterly to the Point of Beginning.

Appendix C

Oregon Administrative Rules (736-40-005 to 736-40-095)
Chapter 736, Division 40 - State Parks and Recreation

DIVISION 40

OREGON SCENIC WATERWAYS

Rules for Conducting Hearings on Scenic Waterways Regulations

736-40-005 The Commission hereby adopts and promulgates rules and procedures governing hearings on regulations for the management of related adjacent land within scenic waterways as provided in ORS 390.845(2):

(1) The Transportation Commission hereby delegates to the State Parks and Recreation Administrator, or his designated representative, the duty of arranging and conducting auditive public hearings, if such is requested, under the provisions of ORS 390.845(2).

(2) Any public hearing held pursuant to ORS 183.330 shall be fully recorded and transcribed by the Secretary of the Commission, and the Secretary will receive and properly mark all exhibits, documents or other statements introduced or received by the hearing officer at the hearing. Exhibits, documents or other statements received by the Commission within 10 days after any hearing will be made part of the record of the hearing.

(3) Following the transcribing of the hearing, the Commission's Secretary shall file in the Commission's records a full copy of the transcript of the hearing as well as a copy of all exhibits, documents or other statements received at the hearing. The transcript, including exhibits, documents or other statements, will be considered in preparing Scenic Waterways rules and regulations by the Commission.

(4) The procedure under which any hearing will be conducted is as follows:

(a) The comments and exhibits to be received at this hearing will be limited to whether the rules and regulations proposed by the State Parks and Recreation Division are reasonable;

(b) The limits and intent of the proposed rules and regulations will be explained by representatives of the State Parks and Recreation Division;

(c) Except for questions that may be asked by the hearing officer there will be no direct questions to or cross-examination of any individual who is making a statement or introducing exhibits;

(d) Following the opening statements by the representatives of the State Parks and Recreation Division the hearing will be open to anyone in attendance who wishes to make a statement or introduce exhibits, either for or against the proposed rules and regulations. The hearing officer will recognize anyone in attendance for this purpose;

(e) The hearing will be continued with such recesses as are necessary, as determined by the hearing officer, until all persons wishing to make a statement or introduce exhibits have had an opportunity to do so.

Stat. Auth.:
Hist.: HC 1252, f. 5-13-71, ef. 5-12-71

Designated Scenic Waterways

736-40-010 The following rivers or segments of rivers are designated as Scenic Waterways:

(1) The segment of the Rogue River extending from the confluence with the Applegate River downstream a distance of approximately 88 miles to Lobster Creek Bridge.

(2) The segment of the Illinois River from the confluence with Deer Creek downstream a distance of approximately 46 miles to its confluence with the Rogue River.

(3) The segment of the Deschutes River from immediately below the existing Pelton Re-regulating Dam downstream approximately 100 miles to its confluence with the Columbia River, excluding the City of Maupin.

(4) The entire Minam River from Minam Lake downstream a distance of approximately 45 miles to its confluence with the Wallowa River.

(5) The segment of the South Fork Owyhee River in Malheur County from the Oregon-Idaho border downstream approximately 25 miles to Three Forks where the main stem of the Owyhee River is formed, and the segment of the main stem Owyhee River from Crooked Creek (6 miles below Rome) downstream a distance of approximately 45 miles to the mouth of Birch Creek.

(6) The segment of the main stem of the John Day River from Service Creek Bridge (at river mile 157) downstream 147 miles to Tumwater Falls (at river mile 10).

(7) The segment of the Sandy River from the east boundary line of Section 25 and Section 36, Township 1 South, Range 4 East, of the Willamette Meridian, in Clackamas County at Dodge Park, downstream approximately 12.5 miles to the west line of the East Half of the Northeast Quarter of Section 6, Township 1 South, Range 4 East, of the Willamette Meridian, in Multnomah County at Dabney State Park.

(8) The confluence of the Rogue and Applegate Rivers is defined as the West boundary line of the East 1/2 of the East 1/2 of Section 19, Township 36 South, Range 6 West, of the Willamette Meridian, in Josephine County.

(9) The segment of the Clackamas River from River Mill Dam to Baker Bridge at Carver.

(10) Opal Lake in Marion County and the main stream of Opal Creek from Opal Lake to its confluence with Battle Ax Creek.

(11) Waldo Lake in Lane County and the segment of the North Fork of the Middle Fork of the Willamette River from Waldo Lake to a point one mile upstream from the railroad bridge that is near the town of Westfir.

(12) The following segments of the Upper Deschutes River in Jefferson and Deschutes Counties are classified as a state scenic waterway. Those segments are: The gauging station (approximately river mile 226.4) immediately below Wickiup Dam downstream approximately 28 miles to the General Patch Bridge at river mile 199; that segment beginning at Harper Bridge at river mile 192 downstream approximately 20 miles to river mile 172 above Bend, Oregon; and the segment beginning at Twin Bridges at river mile 154.5 downstream approximately 34.5 miles to Lake Billy Chinook approximately river mile 120 excluding the Cline Falls Dam and powerhouse between river miles 145 and 144.

Stat. Auth.: ORS Ch. 184 & 390
Hist.: HC 1258, f. 6-30-71; HC 1285, f. 6-27-72; 1OTC 6, f. 11-1-73; 1OTC 14, f. 12-5-73; PR 7-1985, f. & ef. 10-24-85,

PR 6-1986, f. & ef. 5-28-86; PR 7-1986, f. & ef. 5-28-86 ; PR 2-1988, f. & cert. ef. 3-25-88

Definition of Terms

736-40-015 As used in these rules and regulations, unless the context requires otherwise:

(1) "The Act" means the Scenic Waterways Act (ORS 390.805 to 390.925).

(2) "Commission" means the Oregon Transportation Commission.

(3) "Existing Use" means the use to which related adjacent land was being put on December 3, 1970, or any subsequent change in use authorized under the Act or these rules.

(4) "Improvement" means the placing on related adjacent land of any building or structure or modification of existing buildings or structures or the clearing, leveling, filling or excavating of related adjacent land.

(5) "Related Adjacent Land" means all land within one-fourth of one mile (measured horizontally or level, as in usual surveying practice) of the bank on each side of a river within a scenic waterway, except land that, in the Commission's judgment, does not affect the view from the waters within a scenic waterway.

(6) "River Bank" The banks of a river are the boundaries which confine the water to its channel throughout its entire width when the stream is carrying high water at the elevation to which it ordinarily rises annually in season. Generally this will be the line at which the land becomes dominantly influenced by the river and takes on the characteristics of a riverbed and is thereby set apart from the uplands. An evulsion or sudden channel change will not change the boundaries of related adjacent lands.

(7) "Road" means all roads, public and private.

(8) "Scenic Easement" means the acquired right to control the use of related adjacent land, including airspace above such land, for the purpose of protecting the scenic view from waters within a scenic waterway.

(9) "Scenic Waterway" means a river or segment of a river, including related adjacent land and the airspace above, that has been so designated by or in accordance with the Act.

(10) "Seen from the waters" and "visible from the river" mean not entirely concealed from view from the river within a scenic waterway by topography. Land beyond the boundaries of "related adjacent land", whether or not visible from the river, is not within the jurisdiction of this Act.

Stat. Auth.:
Hist.: HC 1258, f. 6-30-71; HC 1285, f. 6-27-72

Responsibility and Authority of the Oregon Transportation Commission

736-40-020 (1) The Act shall be administered by the Commission in such a manner as to protect and enhance the values which caused a scenic waterway to be included in the system. Primary emphasis shall be given to protecting the scenic beauty, fish and wildlife, scientific and recreation features, based on the special attributes of each area.

(2) The Commission has adopted these regulations governing the management of related adjacent lands, including state highway construction, after due consideration of the responsibilities outlined above and consultation with the Oregon State Department of Forestry, the Department of Agriculture, and other such federal, state, and local agencies as may be involved; and with the concurrence of the State Water Resources Board.

(3) Agreements entered into and approvals given by the Commission in no way relieve persons or entities affected thereby of requirements established by other governmental agencies, local, state or federal.

Stat. Auth.:
Hist.: HC 1258, f. 6-30-71; HC 1285, f. 6-27-72

Public Use of Scenic Waterways

736-40-025 (1) These rules apply to all scenic waterways unless more specific rules have been adopted for a particular scenic waterway. All persons using scenic waterways for recreation shall comply with the provisions of the Act and with the rules and regulations adopted by the Commission under the Act:

(a) Private Property: Nothing in the Act or in these rules and regulations affords to any person any right to trespass upon the property of another or in any way alters the rights of private landholders in regard to trespass. The Commission admonishes all persons to respect the rights and sensibilities of those who make their homes and livelihoods within the scenic waterways;

(b) Litter and Pollution: Refuse, scrap, trash and garbage which is not placed in receptacles provided for that purpose at maintained recreation sites shall not be buried or abandoned, but shall be taken out of the scenic waterways for proper disposal. All persons shall avoid pollution of the waters, lands and air within scenic waterways in any manner whatsoever;

(c) Fires: Fires shall be made only in compliance with state law and only when and where there is no possibility of their causing damage. Conditions of wind and weather, proximity of vegetation or flammable materials and other factors as prudence dictates shall be most carefully considered. No open fire shall be made unless a shovel, axe and bucket of water are nearby. No open fire shall be left unattended and all fires shall be completely extinguished with water after use. Permissible fires shall be of the smallest practicable size;

(d) Tree Cutting: Living or standing trees or plants shall not be cut for burning or for any other purpose by persons using the scenic waterways for recreation;

(e) Collecting Souvenirs and Relics: Except as provided by law, antiquities, relics, artifacts, fossils and souvenirs shall not be removed from the site of their discovery or otherwise harmed. Archeological sites and fossil beds shall not be disturbed without proper authority under law;

(f) Livestock: Persons using the scenic waterways for recreation shall not harass or in any way interfere with livestock or domestic animals, whether on private or public land, or damage fences lawfully placed on such lands for their management.

(2) Natural springs shall not be damaged or in any way rendered unusable by persons or animals.

(3) The Commission asks all persons to leave in passing no mark upon the land that might diminish its value to another, for the unspoiled beauty of these waterways, of value to the human spirit, is the common heritage of all.

Stat. Auth.: ORS Ch. 390
Hist.: HC 1285, f. 6-27-72; PR 3-1982, f. & ef. 3-26-82

Land Management

Improvements and Changes in Use of Related Adjacent Lands

736-40-030 (1) Except as provided in section (5) of this rule, OAR 736-40-035 and 736-40-045 through 736-40-075, no person shall make any improvement or change in the existing use of related adjacent land without first giving written notification to the Commission of the intent to make an improvement or change in land use. The proposed improvement or change in land use shall not be made or work started sooner than one year after such notice unless the Commission has given its written approval of the proposal. (See notification procedures in OAR 736-40-080.)

(2) Upon receipt of such notice, the Commission shall determine if the proposal would impair the natural beauty of the scenic waterway substantially.

(3) If the proposed improvement or change of land use would not impair the natural beauty substantially, the Commission shall give written notice to the owner of the related adjacent land that he may proceed immediately with the proposal as described in his notification to the Commission.

(4) Should the Commission determine that the proposal, if carried out, would impair the natural beauty of the scenic waterway substantially, or otherwise violate the provisions of the Act or these rules and regulations, it will so notify the owner of the related adjacent land in writing. No steps shall be taken by the applicant to carry out such proposal until at least one year after the original notice to the Commission unless agreement with the Commission is sooner reached. (See OAR 736-40-080.)

(5) In connection with existing use of related adjacent land, farmers, ranchers and residents may modify existing structures or construct or place such subsidiary and lesser structures adjacent thereto, except residences or guest houses, as are usual and necessary to their existing use without prior notice to the Commission, provided that such modification or construction will not violate subsections (7)(a) and (b) of this rule OAR 736-40-035 and will be in harmony with the natural beauty of the scenic waterway.

(6) Repair and maintenance of existing facilities and structures in a manner compatible with these rules and regulations do not require notification to the Commission.

Stat. Auth.:
Hist.: HC 1285, f. 6-27-72; 1OTC 6, f. 11-1-73

Rules of Land Management

736-40-035 These rules and regulations governing the use of related adjacent lands and improvements made on or to these lands apply to all designated scenic waterways. Land management on scenic waterways includes, but is not limited to, the following examples:

(1) Timber Harvest: The forest cover on related adjacent land is a part of the scenic beauty of the scenic waterway and notification of planned timber harvest operations must be given to the Commission one year prior to commencement. The notification must include a plan specifying timber to be cut, road locations, logging methods, slash cleanup, soil stabilization, revegetation measures and any other details as the Commission may require.

(2) Tree Cutting: No person shall cut any living tree within a scenic waterway without prior written notice except as provided in these rules.

(3) Grazing and Farming: Existing use in the form of grazing or farming of the related adjacent land is a part of the scenic beauty of the waterway. Notification is not required for:

(a) Construction of fences;

(b) Maintenance of farm buildings, fences or appurtenances necessary to existing use;

(c) Laying of irrigation lines;

(d) Pumphouse construction, if not in violation of OAR 736-40-030(5);

(e) Additions to farm buildings, if not in violation of OAR 736-40-030(5);

(f) Crop rotation;

(g) Variations in grazing land management;

(h) Placing of grazing land under cultivation, except within classified natural river areas named in OAR 736-40-045 through 736-40-075;

(i) Construction of silos and grain storage facilities, and other structures or buildings as are needed in connection with the existing use of the related adjacent land, if not in violation of OAR 736-40-030(5), except within classified natural river areas named in OAR 736-40-045 through 736-40-075;

(j) Cutting of danger trees. Notification is required for construction of new roads or improvement of existing roads.

(4) Suburban Housing: Notification is not required for:

(a) Maintenance of existing homes in a manner compatible with these rules and regulations;

(b) Modifications to existing single family dwellings, if not in violation of OAR 736-40-030(5);

(c) Construction of garages necessary to the use of existing homes, if not in violation of OAR 736-40-030(5);

(d) Changes in or additions to homesite landscaping which do not impair vegetation screening structures from view from the river;

(e) Construction of protective fences necessary to use of the home;

(f) Cutting of firewood for occupant's dwelling;

(g) Cutting of danger trees. Notification is required for construction of new roads or improvement of existing roads.

(5) Prospecting, Mining, Dredging, and Quarrying:

(a) All prospecting, mining, dredging, and quarrying operations, including removal or movement of gravel, rocks and sand within related adjacent lands, require notification to the Commission as prescribed herein;

(b) Such notification shall include plans to insure that debris, silt, chemicals or other materials, shall not be discharged into or allowed to

reach the waters within a scenic waterway and that the natural beauty of the scenic waterway shall not be impaired substantially.

(6) Transportation Facilities and Utilities:

(a) No roads, railroads or other facilities for transportation or utilities shall be constructed or improved within a scenic waterway without notification to the Commission as prescribed by the Act and herein;

(b) The Commission, whenever practicable, will require the sharing of land and airspace by such facilities and utilities. All permissible transportation facilities and utilities shall be so located as to minimize impairment of the natural beauty of the scenic waterway. For example, it will be desirable to place electrical and telephone lines underground wherever reasonably practicable.

(7) Structures, Buildings, and Other Improvements: Except as provided in OAR 736-40-030(5), sections (3) and (4) of this rule and OAR 736-40-045 through 736-40-075, no structures, buildings, or other improvements shall be made, erected or placed on related adjacent lands without notification to the Commission as prescribed by the Act and herein. Permitted new structures, buildings, or other improvements on related adjacent lands which can be seen from the waters within a scenic waterway shall:

(a) Be of such design and be constructed of such materials as to be unobtrusive and compatible with the scenic qualities of the area. For example, the following shall apply:

(A) All structures shall be finished inmuted tones appropriate to their natural surroundings;

(B) No large areas, including roofs, shall be finished with white or bright colors or reflective materials;

(C) Except for large farm buildings such as barns, metal siding or roofing shall not be used;

(D) No structures shall exceed 30 feet in height from natural grade on a side facing the river;

(E) All structures shall be so designed and constructed that little or no soil is left exposed when construction is completed.

(b) Be located in such a way that topography and natural vegetation make them as inconspicuous as reasonably practicable, and in no case obtruding on the view from the river. The Commission may require that additional vegetative screening be established and maintained. In such event, it shall be evergreen, wherever practicable, and compatible with natural growth in the area.

(8) Mobile homes, modular residential structures, house trailers, campers and similar structures and vehicles. Mobile homes, modular residential structures, house trailers, campers, motor homes and the like shall not be established as dwellings, either permanent, (or) seasonal or temporary, within related adjacent lands unless they are entirely concealed from view from the waters within a scenic waterway by topography, except, that those mobile homes, modular residential structures and house trailers that are at least 20 feet wide, with exterior dimensions, less hitch, of 800 square feet, may be permitted under these rules subject to the same requirements and standards set forth in the previous section relating to criteria for review for structures and improvements that are visible from the waters within a scenic waterway. Additionally, except when a mobile home, modular residential structure, house trailer or the like is not set on a ground-level foundation, full skirting shall be installed which in design, color and texture appears to be an integral part of the exterior of the structure:

(a) For purposes of these rules, a structure is a mobile home, modular residential structure, house trailer, camper or motor home if it is used, designed or intended to house persons, and is transported to the site in a state of substantial prefabrication. Once a structure fulfills this test, it shall remain subject to the rule regardless of whether the wheels or other temporary assembly have been removed or detached, and regardless of whether the structure is subsequently relocated;

(b) Within public recreation sites and transient public trailer parks where travel trailers, campers, motor homes and similar vehicles are permitted by the public agency, firm or individual maintaining the facility, their transient, short-term use by travelers is allowed, but they shall not be left on the site during their user's absence of more than three (3) day's duration.

(9) Maintenance of Structures and Improvements: Owners and users of existing structures and other improvements shall maintain them and their surroundings in a manner and condition in harmony with the environment, compatible with the objectives set forth in these rules and regulations for the classified river area in which they lie, and without impairing substantially the natural beauty of the scenic waterway. The existing color of such structures may be maintained.

(10) Replacement of Existing Structures and Improvements: Replacement of existing structures and improvements, including those lost by fire, flood or other casualty, will be permitted, provided the new structure or improvement is in compliance with provisions of the Act and these rules and regulations. Notification procedures set forth in OAR 736-40-040 and Commission approval are required.

(11) Advertising: No signs or other forms of outdoor advertising that are visible from waters within a scenic waterway shall be constructed or maintained. Property protection signs (No Hunting, No Trespassing, et cetera) are exempted.

(12) Erosion Protection: The Commission recognizes that erosion protection work and maintenance may be necessary on riverbanks and related adjacent lands along the scenic waterways. Notification, which shall include plans to protect the natural beauty of the scenic waterway, and Commission approval are required.

(13) Submerged and Submersible Lands:

(a) No dam or reservoir or other water impoundment facility shall be constructed or placer mining permitted on waters within scenic waterways. No water diversion facility shall be constructed or used except by right previously established or as permitted by the State Engineer;

(b) No bank protection works or dredging facility shall be constructed or used on such waters, except as permitted by the Director of the Division of State Lands and approved by the State Land Board.

(14) Emergencies:

(a) The owner or his authorized agent may act in emergencies without prior notice when necessary

in the interest of public safety, or safety of his own property, except that notice of any action taken shall be filed with the Commission not later than seven days following the commencement of the emergency procedures;

(b) The owner or his authorized agent must show that the emergency situation required immediate action to prevent immediate danger or damage. Such emergency procedures shall not be extended beyond the minimum necessary to accomplish the needed protection safely and shall be conducted throughout in such manner as to minimize impairment of the natural beauty of the scenic waterway. For example, car bodies and similar scrap or trash shall not be used as riprap.

(15) Solid Waste, Pollution and Sanitation: Owners, occupants and users of related adjacent land shall comply with the rules and regulations of the Department of Environmental Quality relating to solid waste control, water, air and noise pollution control and sewage disposal.

Appendix D

Visual Resources Management Study 1991 of the Middle Deschutes and Lower Crooked River Corridors

A. Introduction

The Wild and Scenic Rivers System was enacted by Congress in 1968 with the Wild and Scenic Rivers Act. This act was created to protect rivers in their free flowing state, to recognize the importance of rivers to our natural and cultural heritage, and to create partnerships between local, state, tribal, and federal agencies in determining the future of river systems.

The Oregon Omnibus Wild and Scenic Rivers Act, enacted by Congress in 1988, designated 40 new river segments located in Oregon for inclusion under the 1968 Act. Included for protection in the 1988 Act are the Middle Deschutes and Lower Crooked Rivers'.

The responsibility to protect or enhance resource values within river corridors has been mandated to each agency responsible for all or part of each designated river. Among these, aesthetics has been identified as an important resource requiring special attention and management. The National Environmental Policy Act of 1969, among other things, calls the government in Section 101 to "...Use all practical means [to] ...assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings." Again, with the Federal Land Policy and Management Act of 1976, the Bureau of Land Management was required in Section 102(a)(8) to manage the public lands "...in a manner that will protect the quality of the ...scenic ...values."

Using BLM manual H-8410-1 of the Visual Resource Management Program (VRM), this document has been prepared in accordance with Congressional mandates to aid in the management of the river from a visual perspective, as a reference for future Limits of Acceptable Change within the river corridors, and to protect the inherent natural qualities of the Middle Deschutes and Lower Crooked National Wild and Scenic Rivers'.

B. Criteria

All Federal, State, and private lands within the Wild and Scenic River (WSR) corridors are addressed in this inventory. The WSR corridors are broken down into 23 Scenic Quality Rating Units (SQRU) located in, but not restricted to, the WSR boundaries.

Boundary lines of SQRU's are prioritized and delineated first by natural features such as visual line of sight boundaries (viewsheds), second by roads, and last by property boundaries where applicable. Rim boundaries are defined by any point from which the river is visible.

SQRU's and management classes have been established by grouping landforms of like character and by evaluating their uniqueness within the major physiographic region of the Columbia Plateau. Management classes have been determined using the inventory class matrix of the VRM process as derived by scenic quality, sensitivity level, and distance zone determinations from field inventory data.

Scenic quality has been rated using BLM Form 8400-1 (1985) Scenic Quality Field Inventory. Select Key Observation Lines (KOL) and Key Observation Points (KOP) have been established for each SQRU at locations most likely to be viewed by visitors. KOL's are located on the rivers edge and include all areas visible from the river. KOP's are selected, publicly accessible, overlooks on the gorge rim. Primary emphasis for scenic quality evaluation has been established with KOL's. Secondary emphasis is established at KOP's. Human modifications have been considered as a factor of scenic quality and have been mapped and identified using BLM Form 8400-2 (1978) Cultural Modification Inventory and Feature Contrast.

Sensitivity levels have been assessed using BLM Form 8400-6 (1985) Sensitivity Level Rating Sheet, BLM Form 8310-8 (1984) Recreation Visitor Survey, documented public concern for the designated area, existing visitor use volume and activity data, and legislative land designations. Public sensitivity has been determined to be greatest at the river's edge where visitor use occurs by foot and viewing time is of greatest duration. Visual vulnerability has been determined to be greatest at overlooks where topographic and vegetative screening is of little effect.

Distance zones are identified by foreground/middleground (0-5 miles), background (5-20 miles), and seldom seen (20+ miles) zones. All of the SQRU's are located within the foreground/middleground zone. Background and seldom seen zones are found with Grizzly Mountain 15 miles to the east, and the Cascade Range 40 miles to the west.

Management classes are established as an inventory tool portraying existing visual resources and as a tool for visual management objectives. Management classes are defined by the following:

Class I The objective of this class is to preserve the existing character of the landscape. Natural ecological changes and very limited management activities are allowed. However, any change created within the characteristic landscape must not attract attention.

Class II The objective of this class is to retain the existing character of the landscape. Changes in any of the basic elements caused by a management activity should not be evident in the characteristic landscape. The level of change should be low and must repeat the basic elements of form, line, color, and texture found in the predominant natural features existing within the landscape. Changes are seen, but do not attract the attention of the casual observer.

Class III The objective of this class is to partially retain the existing character of the landscape. Changes to the basic elements caused by a management activity are evident, but should remain subordinate to the existing landscape and should not dominate the view of the casual observer. Changes should be moderate and repeat the basic elements found in the predominant natural features of the landscape.

Class IV The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. Changes may be high and attract attention. Activities may be dominant features of the landscape but every attempt should be made to minimize the impact of activities through careful location, minimal disturbance, and repeating the basic elements of the natural features of the landscape.

Class V The objective of this class is to provide for areas where activities have disturbed the natural landscape to a point where rehabilitation is needed to bring it up to one of the four other classifications. The level of rehabilitation will be determined by the minimal standards of the desired management class for the area.

A brief summary VRM classification map has been included to orient the reader to the area. For further VRM clarification, contact the BLM, Prineville District Office to review the original VRM classification maps of the Middle Deschutes and Lower Crooked Wild and Scenic Rivers.

Middle Deschutes River

The Middle Deschutes Wild and Scenic River (WSR) consists of a corridor including the river gorge and rim areas of the Deschutes River between Rivermiles 139.9 and 120.1. Approximately 5,920 acres are located within the WSR boundaries. The segment is located approximately 5 miles north-east of Terrebonne, OR and approximately 20 miles north of Bend, OR.

SQRU 1

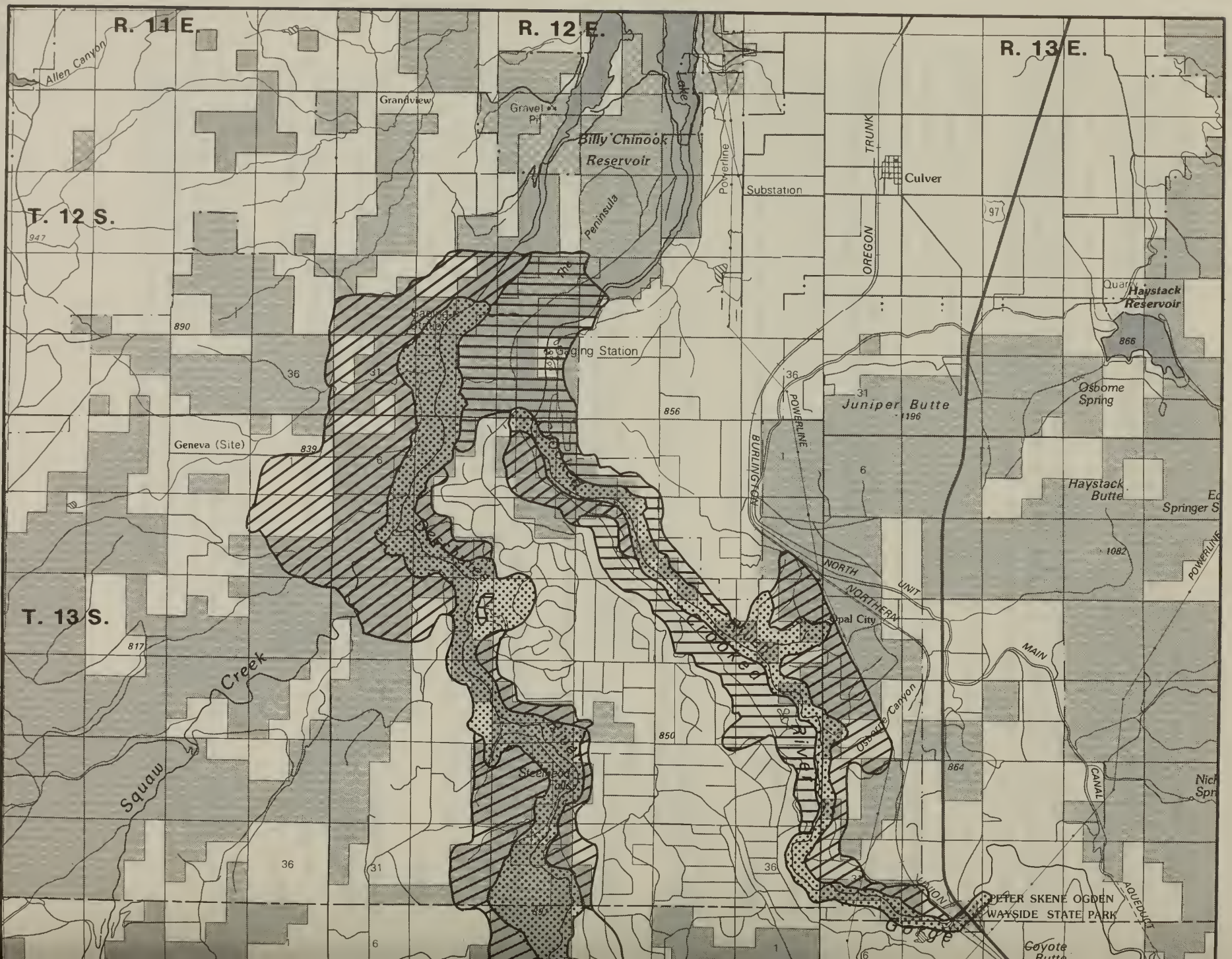
Scenic Quality:	A
Visitor Sensitivity:	High
Visitor Attitude:	High
Use Volume:	Moderate
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION I

Boundaries for this SQRU are delineated by the canyon rim (all lands visible from river) between Rivermiles 132.7 and 119.8. SQRU 1 is the primary viewshed found within the WSR corridor.

SQRU 2

Scenic Quality:	A
Visitor Sensitivity:	High
Visitor Attitude:	High
Use Volume:	Low
Distance Zone:	Foreground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R. 12 E.
R. 13 E.
T. 12 S.
T. 13 S.
Allen Canyon
Grandview
Gravel Pit
Billy Chinook Reservoir
Lake
Powerline
Substation
TRUNK
OREGON
Culver
97
Peninsula
947
890
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817
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1196
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Gaging Station
Geneva (Site)
Juniper Butte
Quarry
Haystack Reservoir
Osborne Spring
Haystack Butte
Springer S
POWERLINE
BURLINGTON
NORTHERN
NORTH UNIT
MAIN
CANAL
Opal City
Squaw Creek
Crooked River
Deschutes River
Steelhead Falls
Chinook Canyon
Osborne Canyon
PETER SKENE OGDEN
WAYSIDE STATE PARK
Coyote Butte
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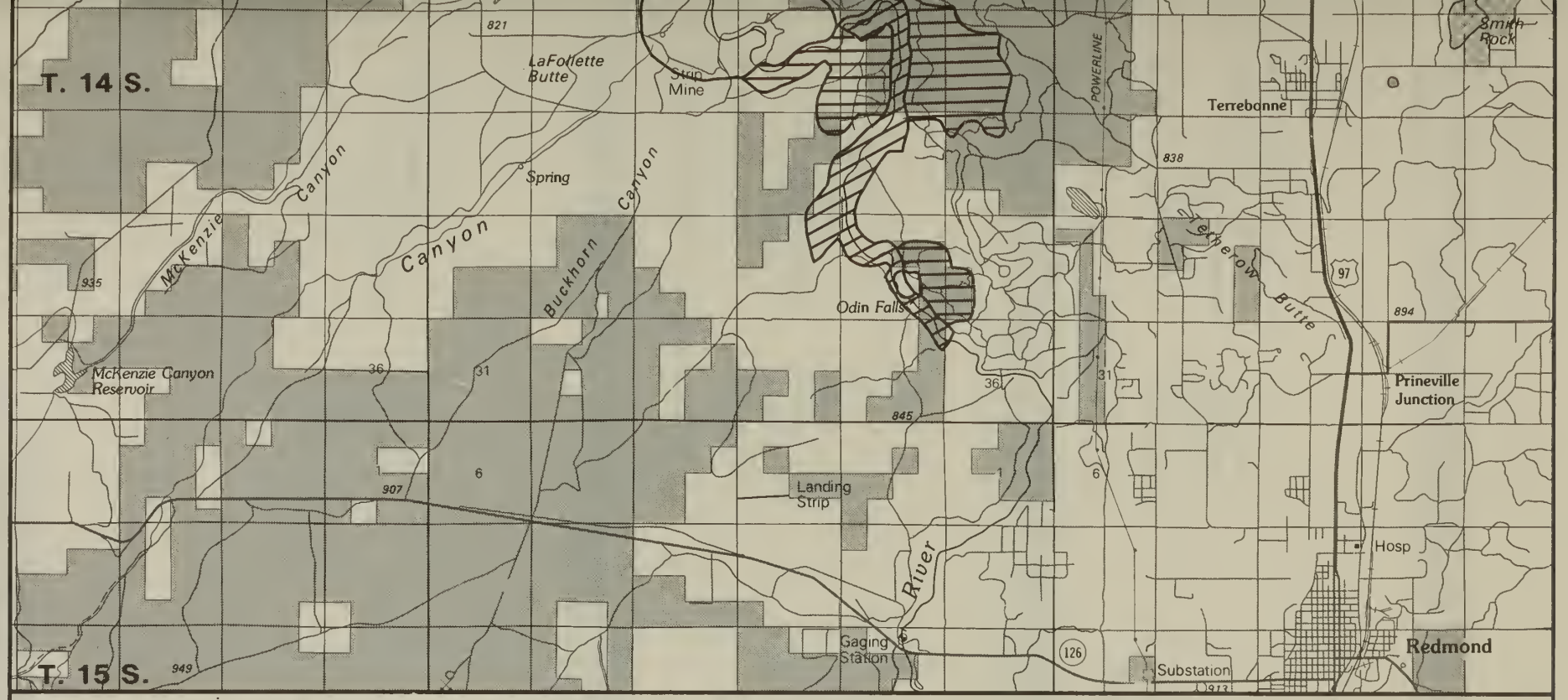


LEGEND

- Class I
- Class II
- Class III
- Class IV

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

MIDDLE DESCHUTES / LOWER CROOKED WILD AND SCENIC RIVERS

VISUAL RESOURCES MANAGEMENT

Oregon

1992

1 0 1 2 3 Miles

Scale 1:100,000

MANAGEMENT CLASSIFICATION II

Boundaries for this SQRU are located between Rivermiles 125 and 119 and include the canyon rim to the east, existing roads to the north and west, and visual boundaries to the south.

SQRU 3

Scenic Quality:	B
Visitor Sensitivity:	Moderate
Visitor Attitude:	Moderate
Use Volume:	Moderate
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION III

Boundaries for this SQRU are located between Rivermiles 122.1 and 119 and include the Deschutes Gorge rim to the west, the Crooked River Gorge to the east, and property lines to the north and south.

SQRU 4

Scenic Quality:	A
Visitor Sensitivity:	High
Visitor Attitude:	High
Use Volume:	Low
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION II

Boundaries for this SQRU are located between Rivermiles 124.5 and 122 and include the canyon rim to the south and west and property lines to the north and east.

SQRU 5

Scenic Quality:	B
Visual Sensitivity:	Moderate
Visitor Attitude:	Moderate
Use Volume:	Moderate
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION III

Boundaries for this SQRU are located between Rivermiles 125 and 124.5 and consist of an inter canyon plateau not within direct visual sight of the river.

SQRU 6

Scenic Quality:	A
Visual Sensitivity:	Moderate
Visitor Attitude:	Moderate
Use Volume:	Low
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION II

Boundaries for this SQRU are located between Rivermiles 127 and 125 an include the canyon rim to the south and west and property lines to the north and east.

SQRU 7

Scenic Quality:	A
Visual Sensitivity:	High
Visitor Attitude:	High
Use Volume:	Moderate
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION II

Boundaries for this SQRU are located between Rivermiles 130 and 127 and include the canyon rim to the south and west and property lines and visual boundaries to the north and east.

SQRU 8

Scenic Quality:	A
Visual Sensitivity:	Moderate
Visitor Attitude:	Moderate
Use Volume:	Low
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION II

Boundaries for this SQRU are located between Rivermiles 131 and 126.5 and include the canyon rim to the west and property and WSR boundaries to the east and south.

SQRU 9

Scenic Quality:	A
Visual Sensitivity:	Moderate
Visitor Attitude:	Moderate
Use Volume:	Low
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION II

Boundaries for this SQRU unit are located between Rivermiles 132 and 130 and include the canyon rim to the south and west and property line boundaries to the north and east.

SQRU 10

Scenic Quality:	C
Visual Sensitivity:	Low
Visitor Attitude:	Low
Use Volume:	Low
Distance Zone:	Foreground

MANAGEMENT CLASS IV

Boundaries for this SQRU are located between Rivermiles 135 and 130 and include roads and ridge lines to the east and west and the canyon rim to the north and south. This unit is dissected by the river gorge which is not included in the unit.

SQRU 11

Scenic Quality:	C
Visual Sensitivity:	High
Visitor Attitude:	Moderate
Use Volume:	High
Distance Zone:	Foreground

MANAGEMENT CLASS V

Boundaries for this SQRU are located between Rivermiles 134.2 and 133 and are delineated by the canyon rim.

SQRU 12

Scenic Quality:	B
Visual Sensitivity:	Moderate
Visitor Attitude:	Moderate
Use Volume:	Moderate
Distance Zone:	Foreground

MANAGEMENT CLASS III

Boundaries for this SQRU are located between Rivermile 134.1 and 135.7 and are delineated by the canyon rim.

SQRU 13

Scenic Quality:	B
Visual Sensitivity:	Moderate
Visitor Attitude:	Moderate
Use Volume:	Moderate
Distance Zone:	Foreground

MANAGEMENT CLASS III

Boundaries for this SQRU are located between Rivermiles 135.7 and 137.3 and include roads to the north and east, property lines to the south, and the canyon rim to the west. This unit is dissected by the river gorge which is not included in the unit.

SQRU 14

Scenic Quality:	A
Visual Sensitivity:	High
Visitor Attitude:	High
Use Volume:	Moderate
Distance Zone:	Foreground

MANAGEMENT CLASS II

Boundaries for this SQRU are located between Rivermiles 135.7 and 139.3 and are delineated by the canyon rim.

SQRU 15

Scenic Quality:	B
Visual Sensitivity:	Moderate
Visitor Attitude:	Moderate
Use Volume:	Low
Distance Zone:	Foreground

MANAGEMENT CLASS III

Boundaries for this SQRU are located between Rivermile 139.2 and 140.4 and include property lines to the north, south, east, and west. This unit is dissected by, but does not include the river gorge.

SQRU 16

Scenic Quality:	C
Visual Sensitivity:	Moderate
Visitor Attitude:	Moderate
Use Volume:	Low
Distance Zone:	Foreground

MANAGEMENT CLASS III

Boundaries for this SQRU are located between Rivermiles 139.3 and 139.9 and are delineated by the canyon rim.

SQRU 17

Scenic Quality:	B
Visual Sensitivity:	High
Visitor Attitude:	High
Use Volume:	Moderate
Distance Zone:	Foreground

MANAGEMENT CLASS II

Boundaries for this SQRU are located between Rivermile 139.9 and 140.3 and are delineated by the canyon rim.

Lower Crooked River

The Lower Crooked Wild and Scenic River (WSR) consists of a corridor including the river gorge and rim areas of the Crooked River between Rivermiles 17.8 to 8.0. Approximately 2,560 acres are located within the WSR boundaries. The segment is located approximately 5 miles northeast of Terrebonne, OR and approximately 20 miles north of Bend, OR.

SQRU 1

Scenic Quality:	A
Visitor Sensitivity:	High
Visitor Attitude:	High
Use Volume:	Moderate
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION I

Boundaries for this SQRU are delineated by the canyon rim (all lands visible from river) between rivermiles 18.0 and 7.7. SQRU 1 is the primary viewshed found within the WSR corridor.

SQRU 2

Scenic Quality:	A
Visitor Sensitivity:	Moderate
Visitor Attitude:	Moderate
Use Volume:	Moderate
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION II

Boundaries for this SQRU are located between rivermiles 10.5 and 8.0 and include the canyon rim to the east, the upper plateau rim to the west, and property boundaries to the south.

SQRU 3

Scenic Quality:	B
Visitor Sensitivity:	High
Visitor Attitude:	Moderate
Use Volume:	High
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION III

Boundaries for this SQRU are located between rivermiles 15.5 and 10.5 and include the canyon rim to the east, the upper plateau rim to the west, and property boundaries to the north. This unit consists of the inner canyon plateau on which the Crooked River Ranch resort is located.

SQRU 4

Scenic Quality:	B
Visitor Sensitivity:	Moderate
Visitor Attitude:	Moderate
Use Volume:	Moderate
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION III

Boundaries for this SQRU are located between rivermile 12.0 and 8.0 including the canyon rim to the west and Wild and Scenic boundary lines to the east.

SQRU 5

Scenic Quality:	A
Visual Sensitivity:	Moderate
Visitor Attitude:	Moderate
Use Volume:	Moderate
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION II

Boundaries for this SQRU are located between rivermile 18.1 and 11.9 including the canyon rim to the west and roads to the east.

SQRU 6

Scenic Quality:	A
Visual Sensitivity:	High
Visitor Attitude:	High
Use Volume:	High
Distance Zone:	Foreground

MANAGEMENT CLASSIFICATION II

Boundaries for this SQRU are delineated by the canyon rim (all lands visible from river) between rivermiles 18.9 and 18.0. SQRU 6 is not located within the WSR boundary, however, its scenic quality is an important consideration to maintain the integrity of scenic quality in the adjoining WSR corridor.

Appendix E

Recreation/Visitor Use Survey
Steelhead Falls Area

Summer 1991

This single point visitor use study was conducted to gain a general understanding about the level and type of recreation use that occurs within the planning area. More extensive studies should be conducted in the future to help facilitate user need, resolve user and resource conflict, and effectively manage the area.

All answers are depicted in percentages by the total number of respondents (33). Therefore, percentages will not always add up to 100 percent. Those responses that show a 0% do not mean that the activity does not occur. It simply means that the respondents were not engaged in that specific activity. More detailed survey information is available at the BLM, Prineville District Office.

General Information

1. Location of Visit to Area

67%	Steelhead Falls
5%	Crooked River Ranch
28%	Deschutes River

2. Number of People in Group

3%	1
52%	2
33%	3 - 5
9%	6 - 9
3%	10+

3. Travel Method

55%	Car
32%	Pick-up (Truck, etc. either 2 or 4-wheel drive)
3%	Motor-home (RV, Van, Camper trailer)
3%	Truck and motorhome
6%	Foot

Trip Information

4. Visiting the Area is:

90%	Primary trip destination
6%	One of several planned stops
3%	Unplanned stop

5. Times Visited the Area in the Last 5 Years

6% First time
13% Once before
13% Two/three times
68% Four or more

6. Description of Group

3% Alone
53% Family
31% Friends
13% Family and friends

7. Place of Origin

12% Crooked River Ranch
48% Central Oregon
0% Eastern Oregon
0% Southwest Oregon
3% Northwest Oregon
27% Portland Metropolitan Area
3% Willamette Valley
0% Another state
0% California
3% Another country
3% Washington state

8. Length of Stay

67% One day
6% Two days
15% Three days
12% Four to seven days
0% More than seven days

9. Time of Arrival

23% Morning (6:00 a.m. to 11:59 p.m.)
61% Afternoon (12:00 p.m. to 5:59 p.m.)
16% Evening (6:00 p.m. to 5:59 a.m.)

10. Time of Departure

17% Morning (6:00 a.m. to 11:59 p.m.)
37% Afternoon (12:00 p.m. to 5:59 p.m.)
47% Evening (6:00 p.m. to 5:59 a.m.)

Recreation Activities and Equipment

11. Recreation Activity Engaged in

33%	Camping
0%	Biking
79%	Fishing
15%	Swimming
73%	Sightseeing
6%	Photography
0%	Hunting
64%	Hiking
0%	Kayaking
3%	Rafting
27%	Picnicking
58%	Wildlife observation
0%	Off-highway vehicle travel
0%	Vehicle touring
0%	Canoeing
3%	Sunbathing

12. Equipment Used in the Area

59%	Car
16%	4-Wheel drive
6%	Van
0%	Standard bicycle
0%	Horse/mule
31%	Tent
0%	Canoe
0%	Kayak
0%	Jet ski
0%	Jet boat
25%	Pick-up
0%	Motor home
0%	Motorized trail bike
0%	Mountain bike
0%	Camper trailer
3%	Raft
6%	Canoe
3%	Inner tube
3%	Scuba gear
3%	Wheelchair

13. Primary Reason for Visiting the Area

3%	Experiencing new and different things
55%	Feeling isolated
10%	Resting physically
3%	Doing something with family
10%	Giving mind a rest
3%	Being with friends
0%	Chancing dangerous situations
0%	Developing skills
0%	Talking to new people
0%	Learning more about nature
0%	Keeping physically fit
3%	Release tension
0%	Local
32%	Love the area
29%	Fishing
0%	Observe wildlife
3%	Less crowded than other areas
3%	Swimming
3%	Weather

15. Were Expectations Met?

68%	Met
16%	Mostly met
6%	Neutral
6%	Mostly not met
3%	Not met

16. Additional Comments:

Develop/Not Develop

32%	No more development; good the way it is.
10%	Less development; more primitive to reduce crowds.
13%	Support wilderness.
3%	Don't support wilderness.

Desired Facilities/Development

3% Wheelchair access.
3% More garbage cans.
3% More water.
13% Want drive-in campsites.
32% Want walk-in campsites.
3% Add trails into canyons, along river (general).
3% Better trail to Steelhead Falls.
3% Better access to west side .
3% Better access to canyon than the trail.
3% Campsites distanced far apart.
3% Sign trails.

Desired Services

3% Enforce regulations.

Facilities/Services Not Desired

6% Developed hiking trails.

Desired Improvement of Fisheries

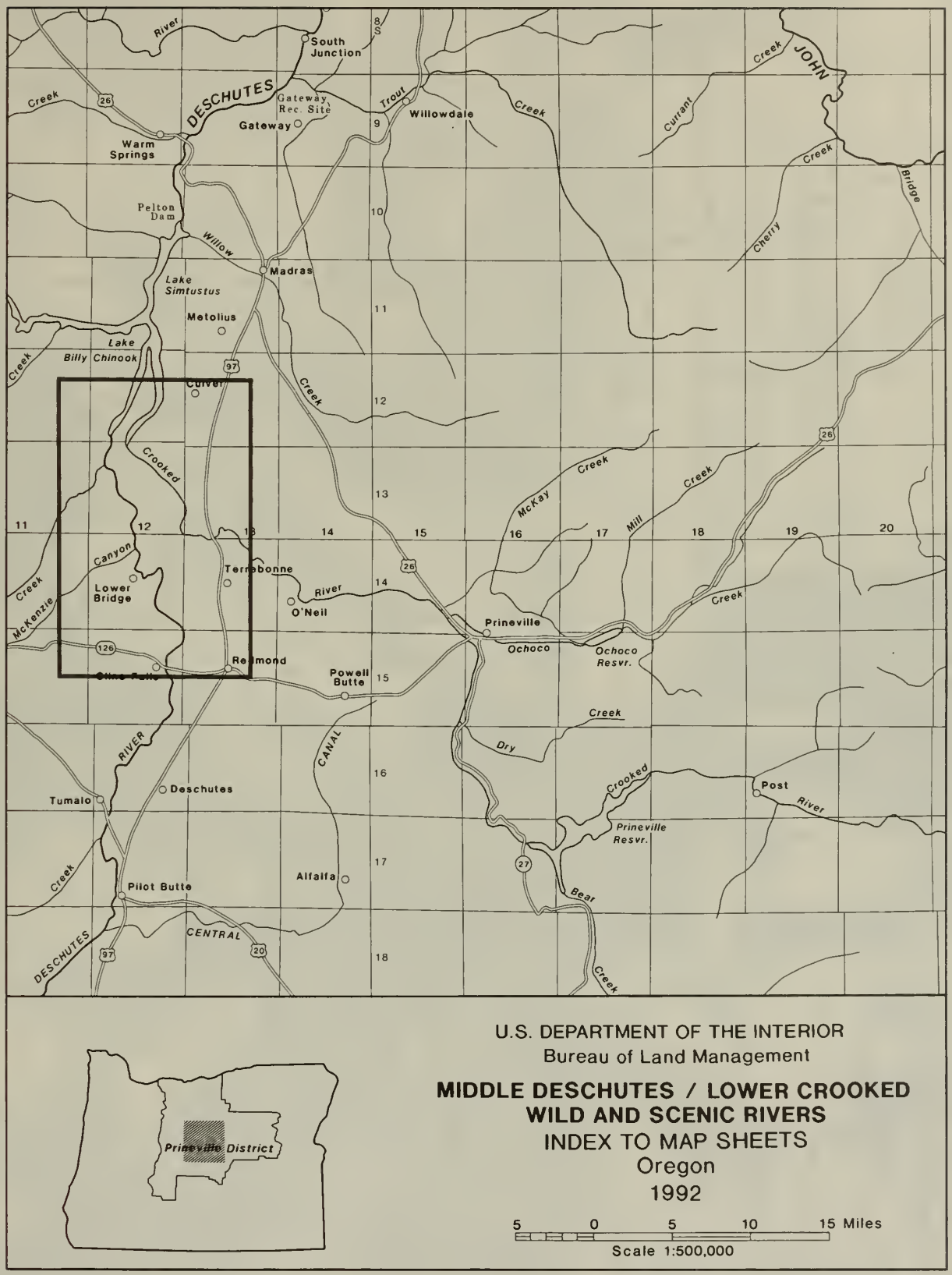
6% Improve fisheries (general).
3% Build fishing ladders for fish passage.
3% Fix existing fish ladders.

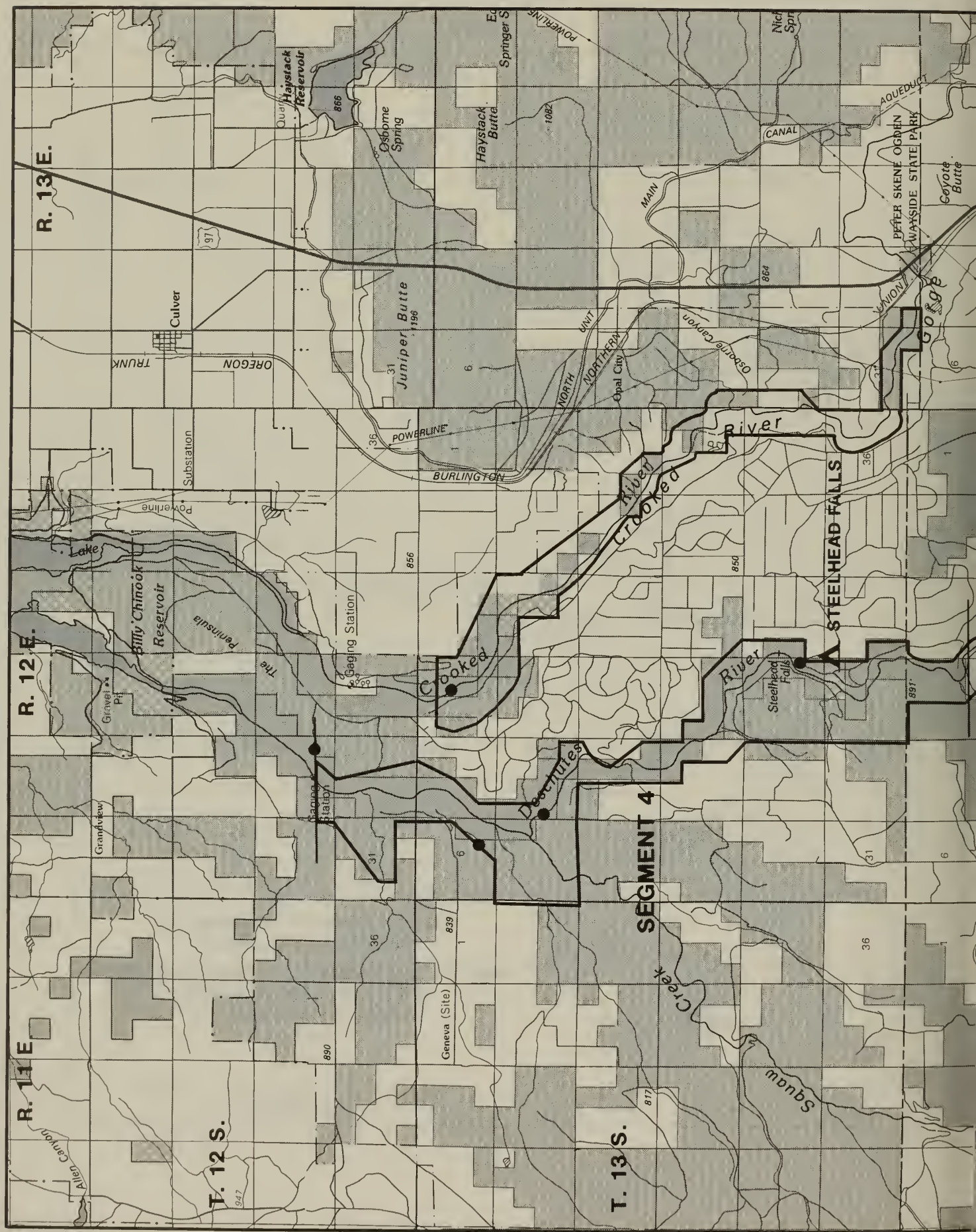
Desired Changes in Fishing Regulations
6% Increase fish limit.

Complaints

10% Too much litter.
23% Prefer not to see housing on rim.
3% Too crowded.
13% Overall area needs to be better managed (general).
6% Manage trails better.
6% Manage roads better.
10% Close some of the access roads.
3% Pull parking for trailhead off of rim.
3% Reduce number of trails.
3% Cut the junipers.

Appendix F
Maps

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R. 11 E.
T. 12 S.
T. 13 S.
Culver
Haystack Reservoir
Osborne Spring
Haystack Butte
Juniper Butte
Springer S
Nich Spri
AQUEDUCT
CANAL
MAIN
PETER SKENE OGDEN WAYSIDE STATE PARK
Coyote Butte
Gorge
UNION
Osborne Canyon
Opal City
NORTHERN
NORTH
UNIT
POWERLINE
BURLINGTON
TRUNK
OREGON
97
Substation
Powerline
Lake
Billy Chinook Reservoir
Peninsula
The
Gravel Pit
Grandview
Gaging Station
Crooked River
Deschutes River
Steelhead Falls
STEELHEAD FALLS
SEGMENT 4
Geneva (Site)
Squaw Creek
Allen Canyon
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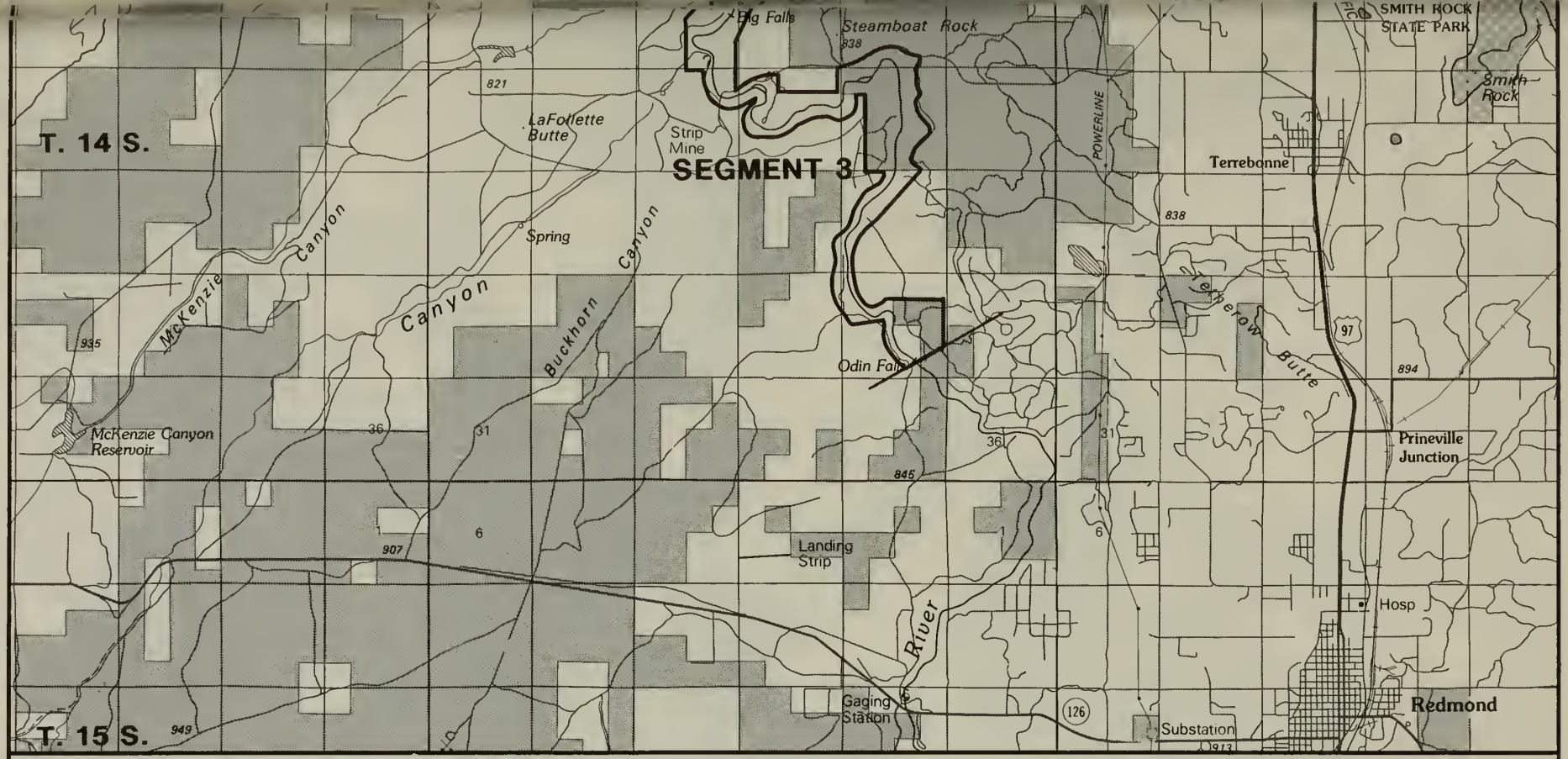


LEGEND

- Public Lands (Admin. by BLM)
- National Grassland
- State Lands
- Private Lands
- Proposed Wild and Scenic River Boundary
- Campgrounds
- Dispersed Use Trailhead
- Trail

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

MIDDLE DESCHUTES / LOWER CROOKED WILD AND SCENIC RIVERS

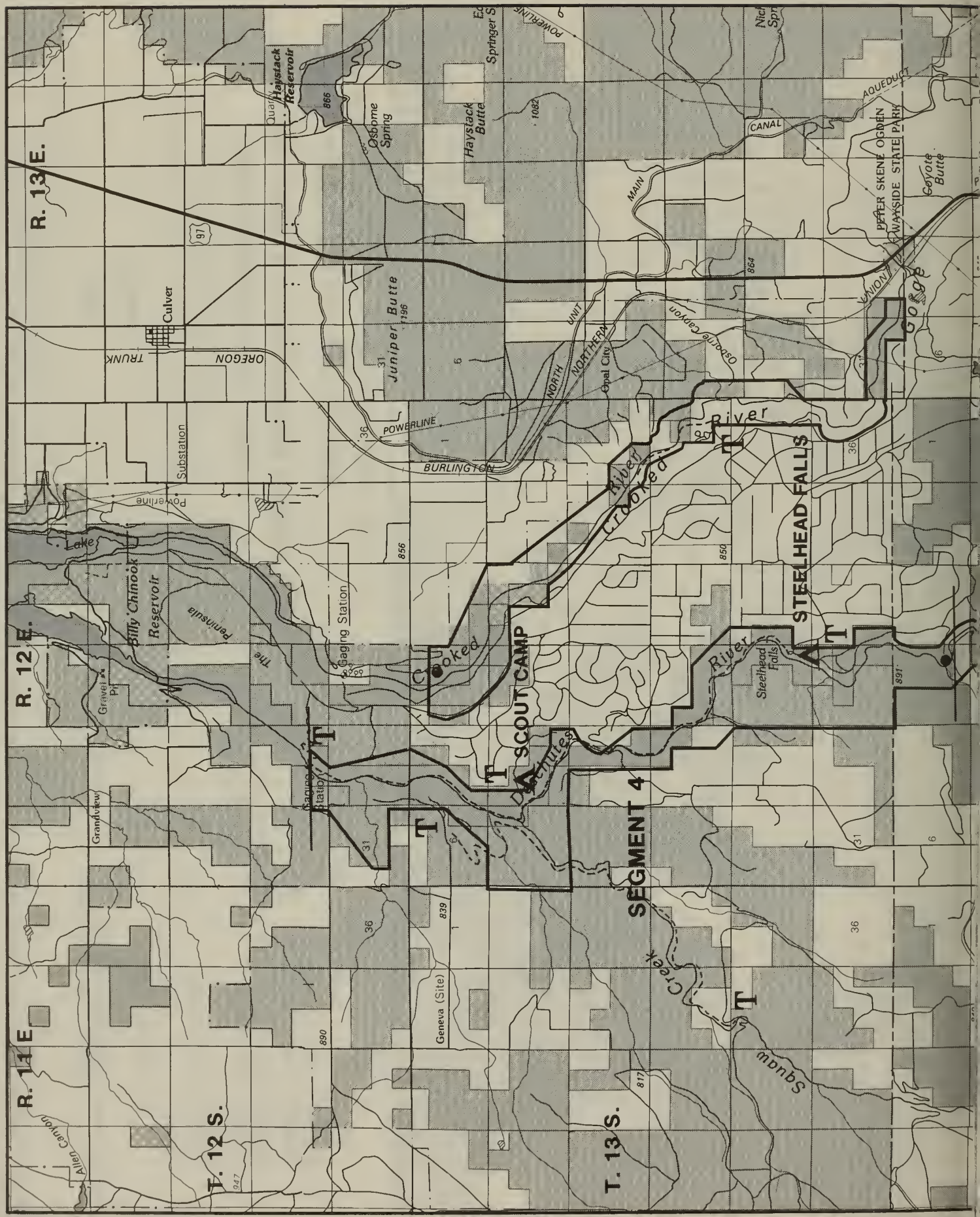
EXISTING SITUATION
AND ALTERNATIVE 1 (NO ACTION)

Oregon

1992

1 0 1 2 3 Miles

Scale 1:100,000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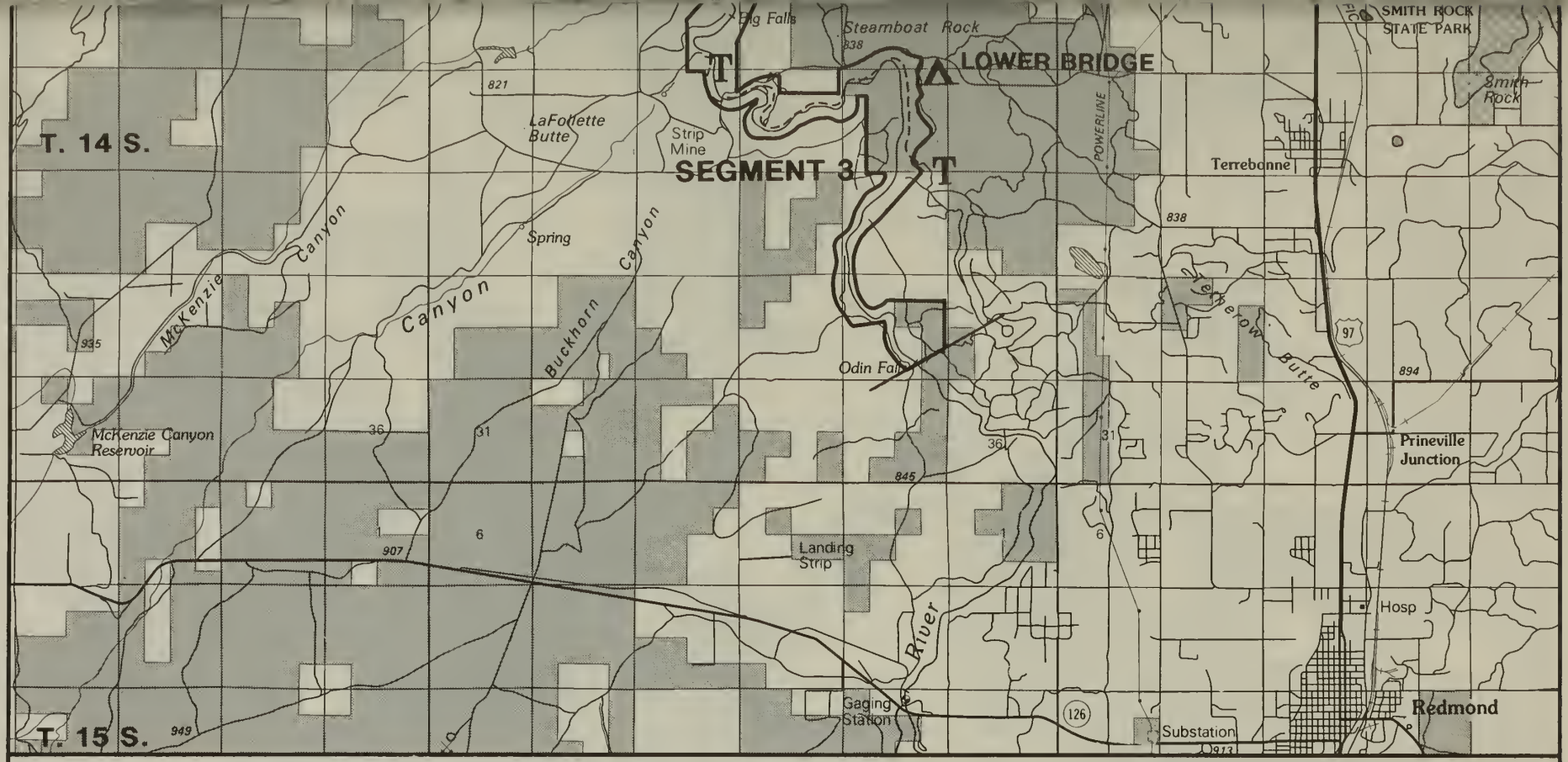
R. 12 E.
R. 13 E.
T. 12 S.
T. 13 S.
SEGMENT 4
SCOUT CAMP
STEELHEAD FALLS
Crooked River
Billy Chinook Reservoir
Haystack Reservoir
Juniper Butte
Haystack Butte
Osborne Spring
Culver
Gaging Station
Geneva (Site)
Grandview
Gravel Pit
Peninsula
Powerline
Substation
POWERLINE
BURLINGTON
NORTHERN
Oval City
CANAL
AQUEDUCT
MAIN
PETER SKENE OGDEN WAYSIDE STATE PARK
Coyote Butte
Steelhead Falls
Squaw Creek
Allen Canyon
TRUNK
OREGON
Lake
The
Dam
Gaging Station



LEGEND

- Public Lands (Admin. by BLM)
- National Grassland
- State Lands
- Private Lands
- Proposed Wild and Scenic River Boundary
- Campgrounds
- Dispersed Use Trailhead
- Trail
- Developed Trailhead

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

MIDDLE DESCHUTES / LOWER CROOKED WILD AND SCENIC RIVERS

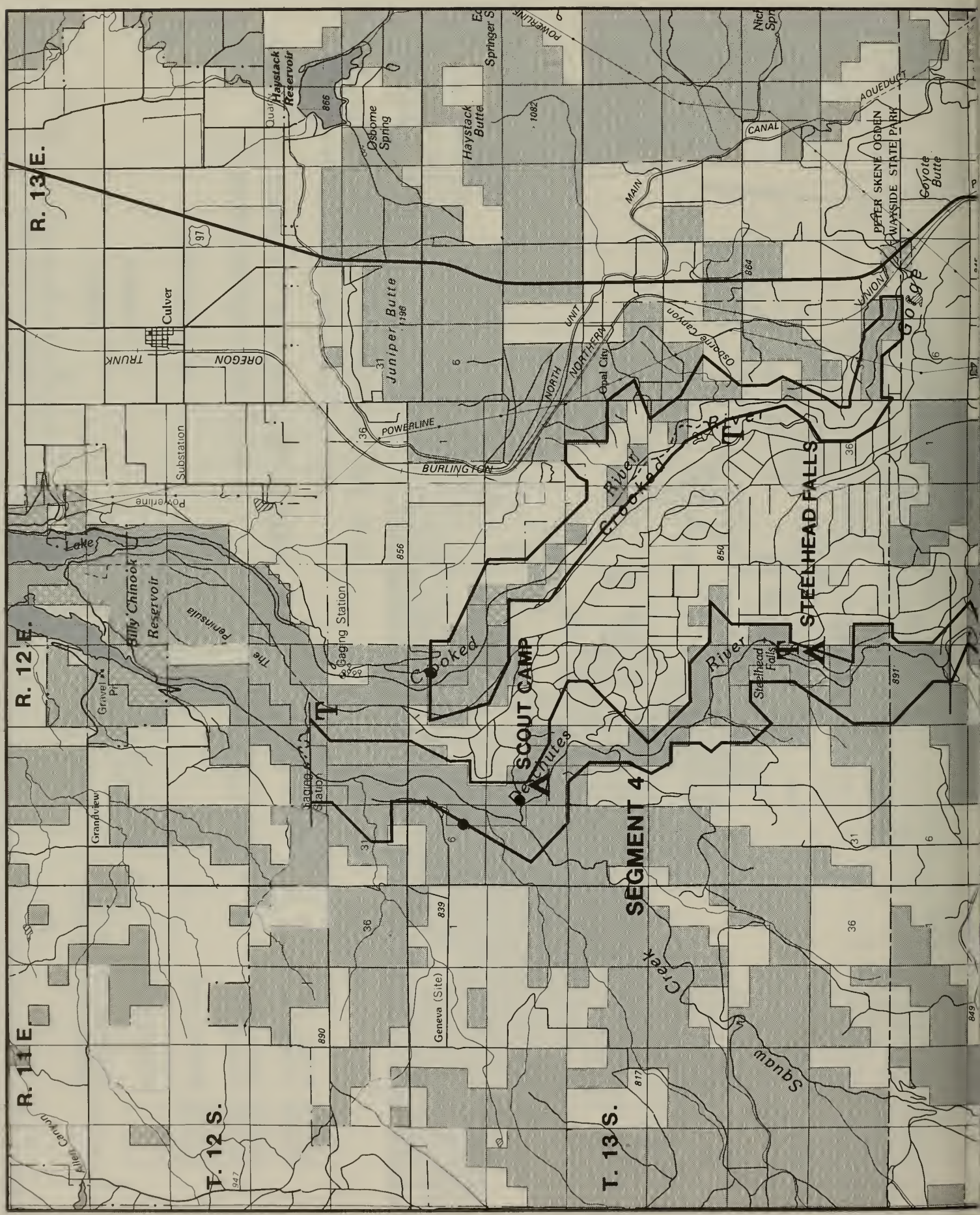
ALTERNATIVE 2

Oregon

1992

1 0 1 2 3 Miles

Scale 1:100,000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T. 12 S.
T. 13 S.
SEGMENT 4
SCOUT CAMP
STEELHEAD FALLS
Crooked River
Deschutes River
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Billy Chinook Reservoir
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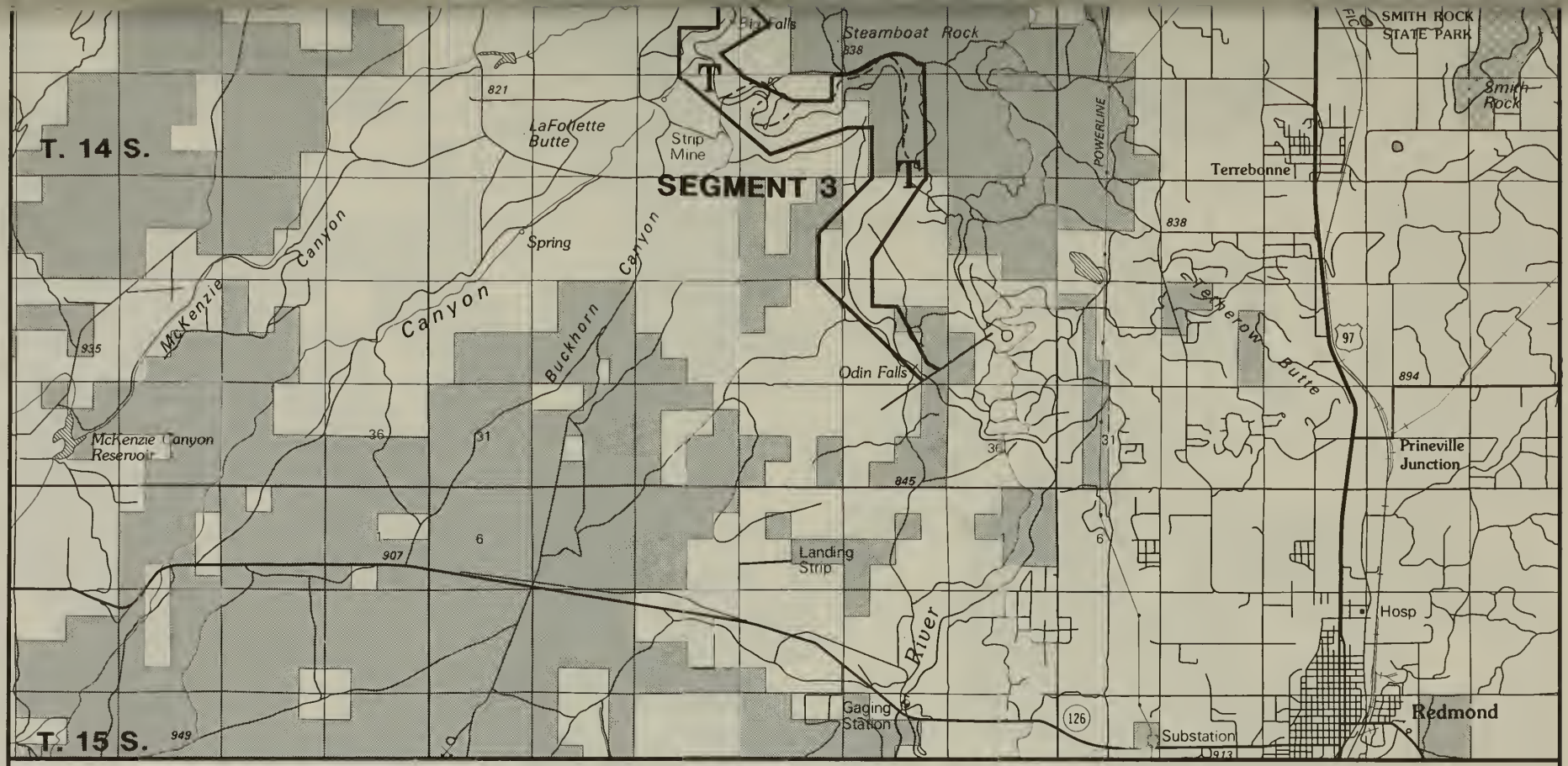
OREGON
Squaw Creek
Juniper Canyon



LEGEND

- Public Lands (Admin. by BLM)
- National Grassland
- State Lands
- Private Lands
- Proposed Wild and Scenic River Boundary
- Campgrounds
- Dispersed Use Trailhead
- Trail
- Developed Trailhead

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

MIDDLE DESCHUTES / LOWER CROOKED WILD AND SCENIC RIVERS

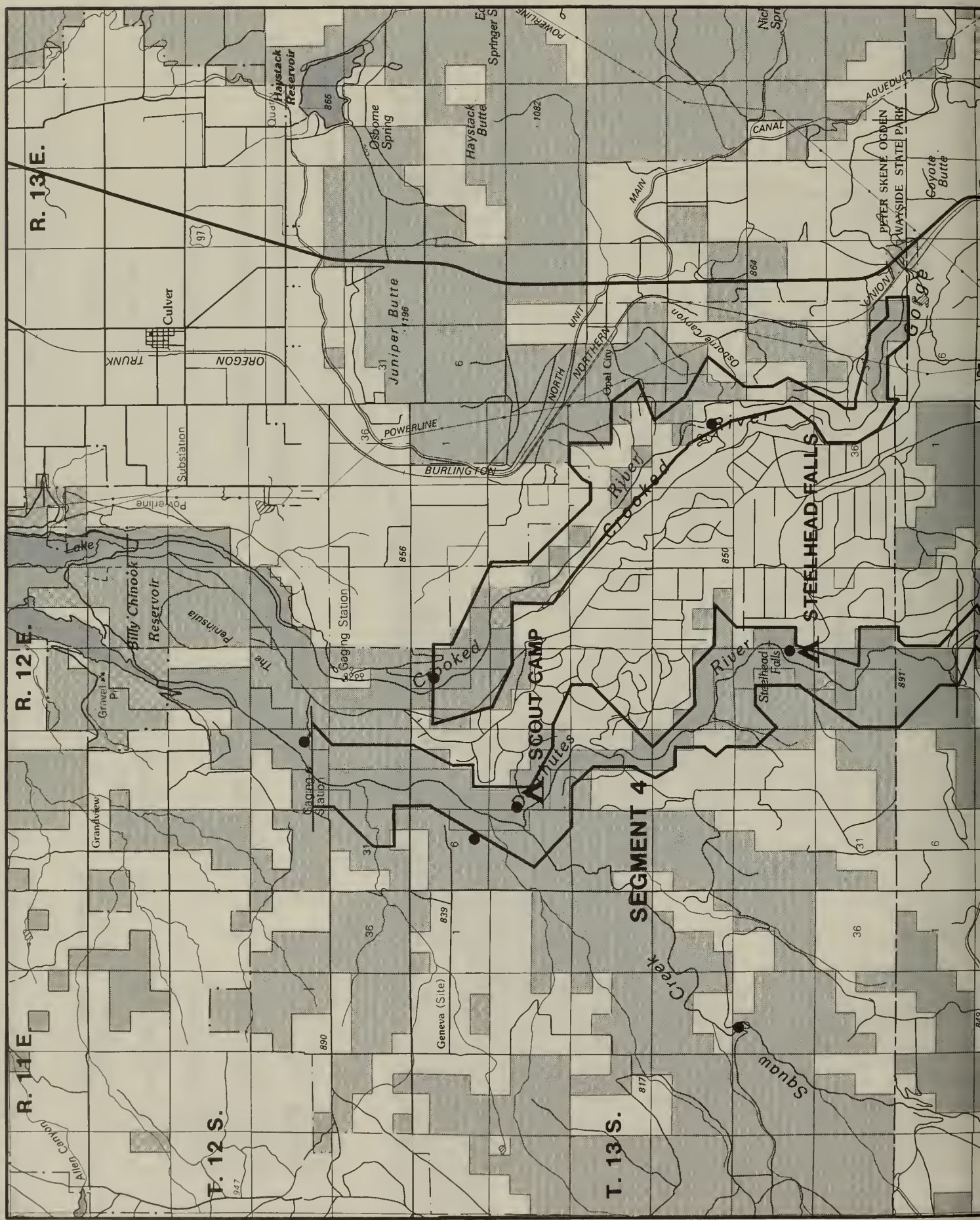
ALTERNATIVE 3

Oregon

1992

1 0 1 2 3 Miles

Scale 1:100,000


R. 13 E.
R. 12 E.
R. 11 E.
T. 12 S.
T. 13 S.
SEGMENT 4
SCOUT CAMP
STEELHEAD FALLS
Crooked River
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Billy Chinook Reservoir
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Juniper Butte
Haystack Butte
Osborne Spring
Springer S
POWERLINE
BURLINGTON
NORTHERN
NORTH UNIT MAIN
CANAL
AQUEDUCT
Opal City
Osborne Canyon
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Coyote Butte
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Powerline
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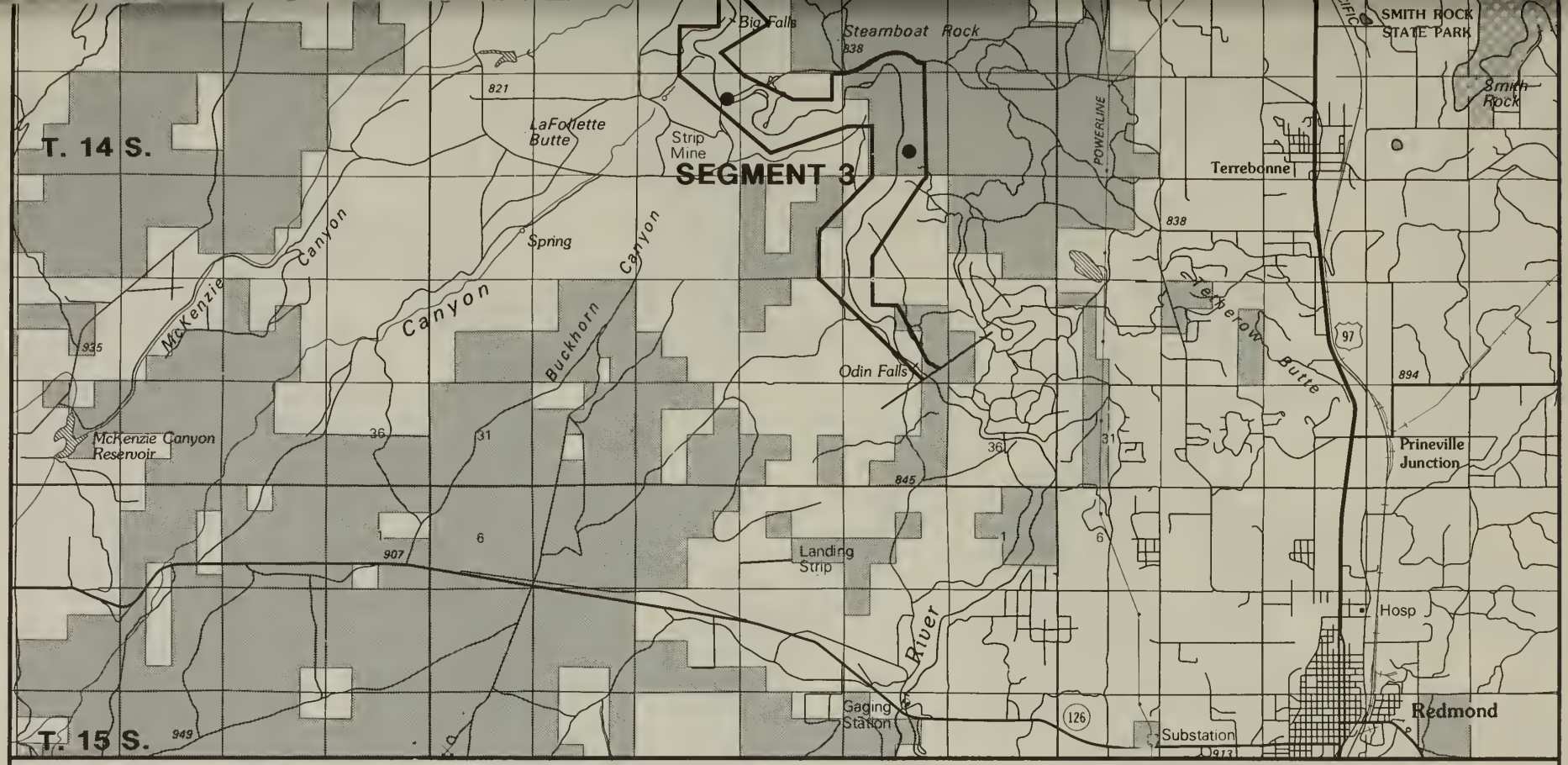
Gaging Station
Gravel Pit
Grandview
Agency Station
Tetherow Buttes
Steelhead Falls
Geneva (Site)
Squaw Creek
Allen Canyon



LEGEND

- Public Lands (Admin. by BLM)
- National Grassland
- State Lands
- Private Lands
- Proposed Wild and Scenic River Boundary
- Campgrounds (walk in)
- Dispersed Use Trailhead

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

MIDDLE DESCHUTES / LOWER CROOKED WILD AND SCENIC RIVERS

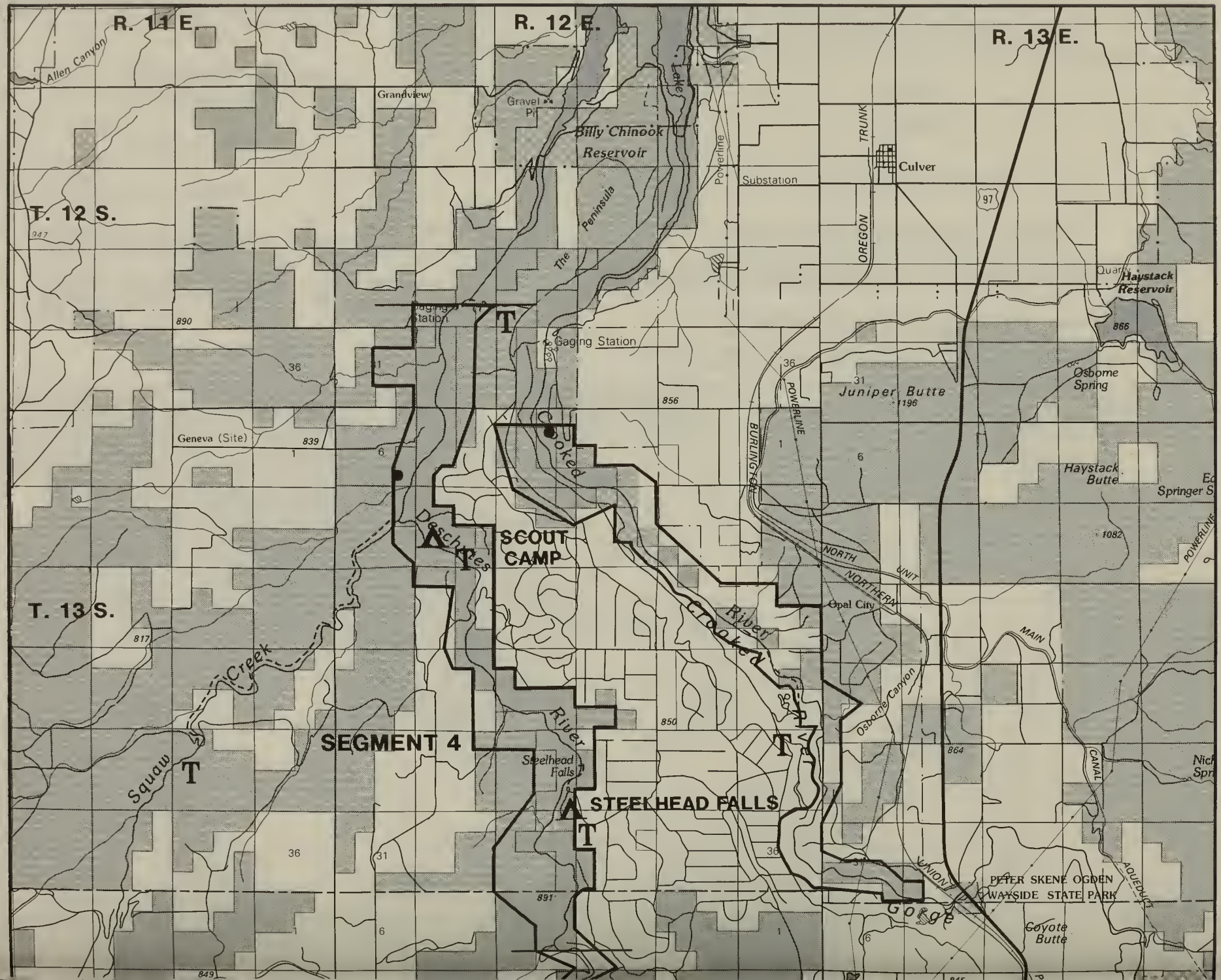
ALTERNATIVE 4

Oregon

1992

1 0 1 2 3 Miles

Scale 1:100,000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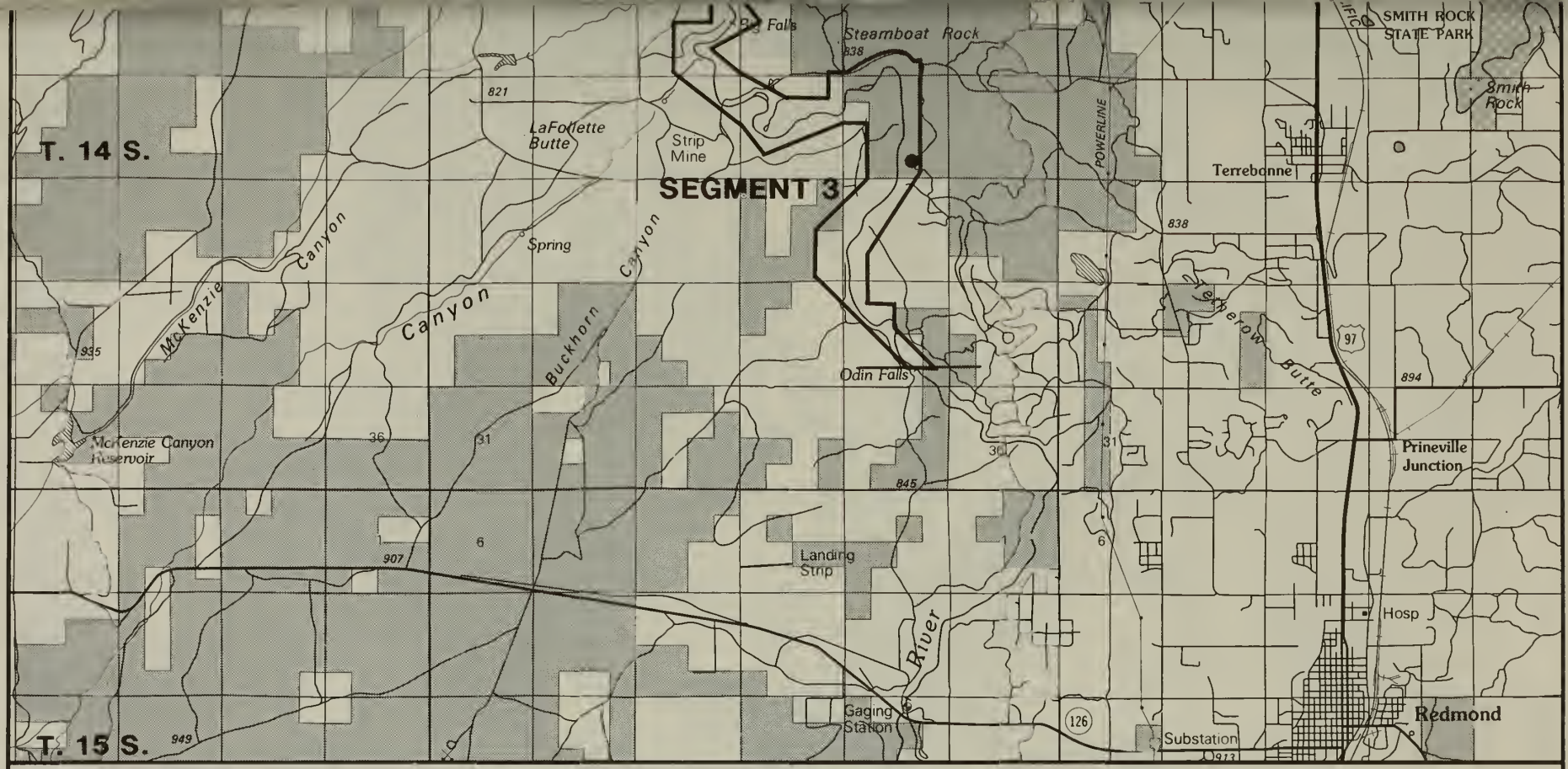
T. 13 S.
Allen Canyon
Grandview
Gravel Pit
Billy Chinook Reservoir
Lake
Powerline
Substation
Peninsula
The
Gaging Station
Culver
TRUNK
OREGON
97
Quarry
Haystack Reservoir
866
Osborne Spring
Juniper Butte
1196
POWERLINE
BURLINGTON
Geneva (Site)
839
Haystack Butte
Springer S
Crooked
Deschutes
SCOUT CAMP
NORTH
UNIT
NORTHERN
Opal City
1082
Crooked River
MAIN
Creek
Squaw
SEGMENT 4
Steelhead Falls
STEELHEAD FALLS
Osborne Canyon
CANAL
AQUEDUCT
UNION
PETER SKENE OGDEN WAYSIDE STATE PARK
Gorge
Coyote Butte
947
890
856
817
850
864
891
849
36
31
1
6



LEGEND

- Public Lands (Admin. by BLM)
- National Grassland
- State Lands
- Private Lands
- Proposed Wild and Scenic River Boundary
- Campgrounds
- Dispersed Use Trailhead
- Trail
- Developed Trailhead

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

MIDDLE DESCHUTES / LOWER CROOKED WILD AND SCENIC RIVERS

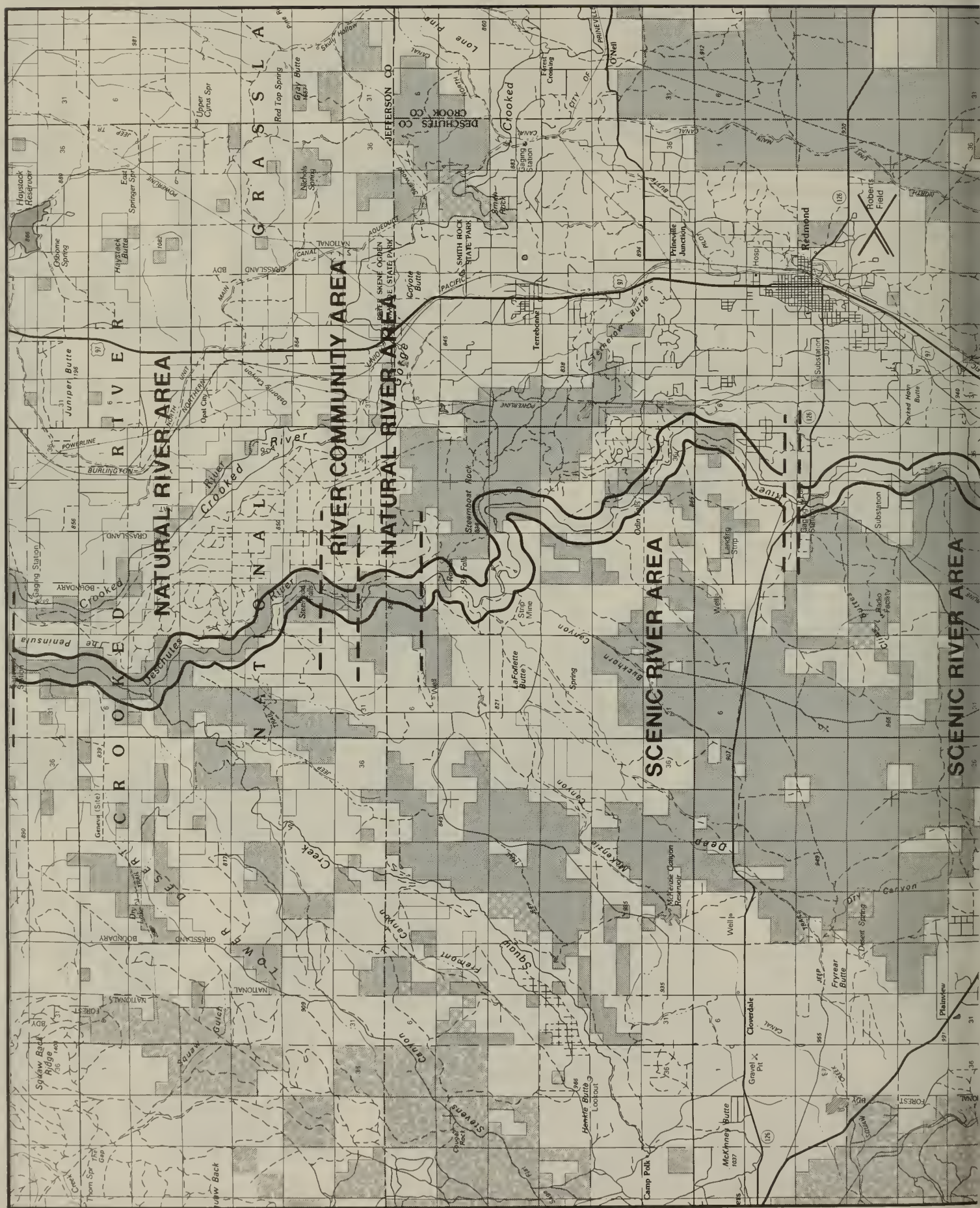
PREFERRED ALTERNATIVE

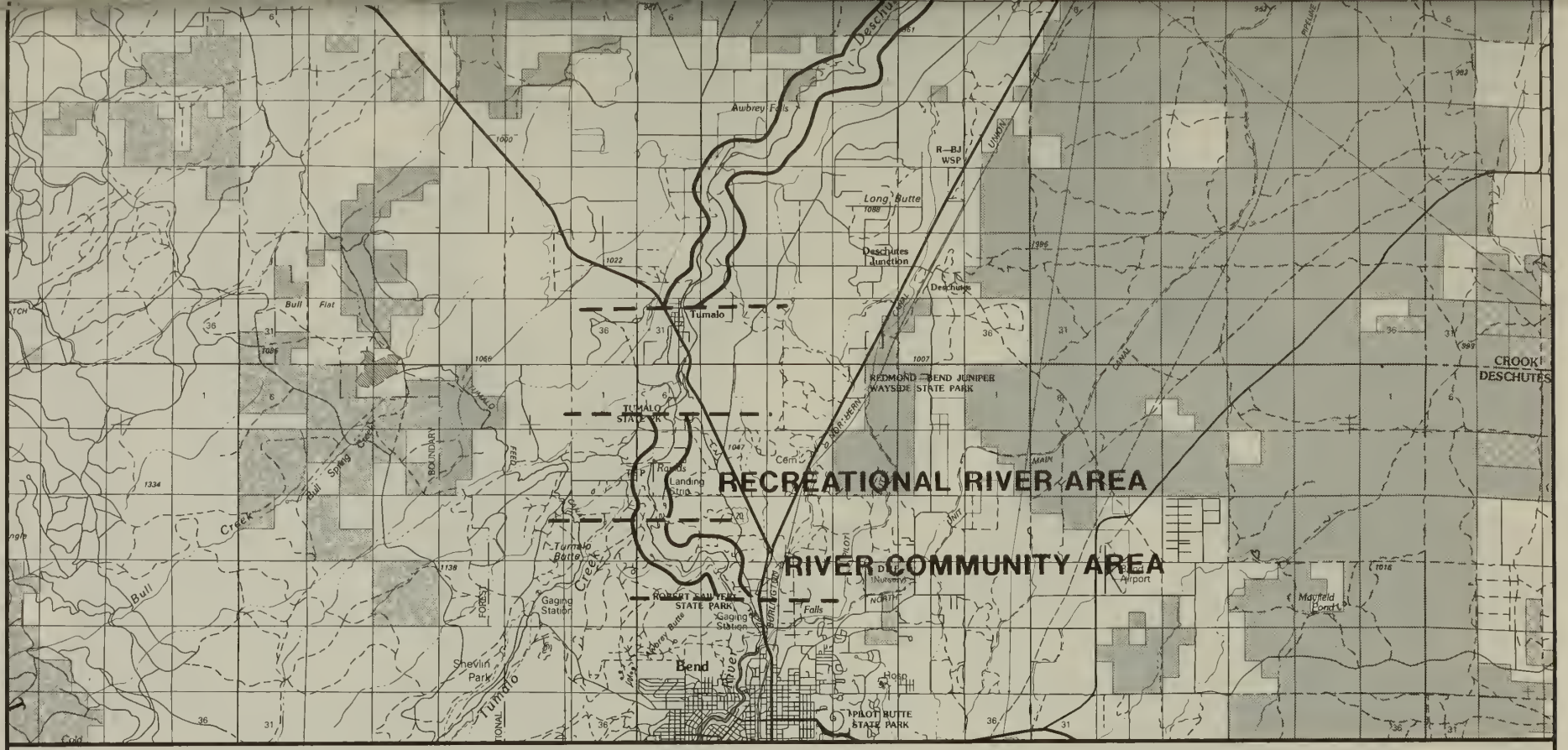
Oregon

1992

1 0 1 2 3 Miles

Scale 1:100,000


CROOKED RIVER NATIONAL GRASSLAND
NATURAL RIVER AREA
RIVER COMMUNITY AREA
NATURAL RIVER AREA
SCENIC RIVER AREA
SCENIC RIVER AREA
Crooked River
Deschutes
The Peninsula
Redmond
Terrebonne
Prineville Junction
Smith Rock State Park
Skene Odbin State Park
Steamboat Rock
Big Falls
Steelhead Falls
Lone Pine
Crooked River Canal
Haystack Reservoir
Juniper Butte
Haystack Butte
Coyote Butte
Tetherow Butte
Fryrear Butte
McKinney Butte
Gray Butte
Powerline
Burlington Northern
Pacific Northwest
Jefferson Co
Deschutes Co
Crook Co
Roberts Field
Cloverdale
Camp Polk
Plainview
Gravel Pit
Lookout
Substation
Gaging Station
Landing Strip
Radio Facility
Well
Spring
Canyon
Creek
Gulch
Butte
Reservoir
Boundary
Grassland
National Forest
Canal
Ditch
Flume
Jeep Trail
Powerline



LEGEND

- Public Lands (Admin. by BLM)
- National Grasslands
- Forest Service Lands
- State Lands
- Private Lands
- State Scenic Waterway Administrative Boundary

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

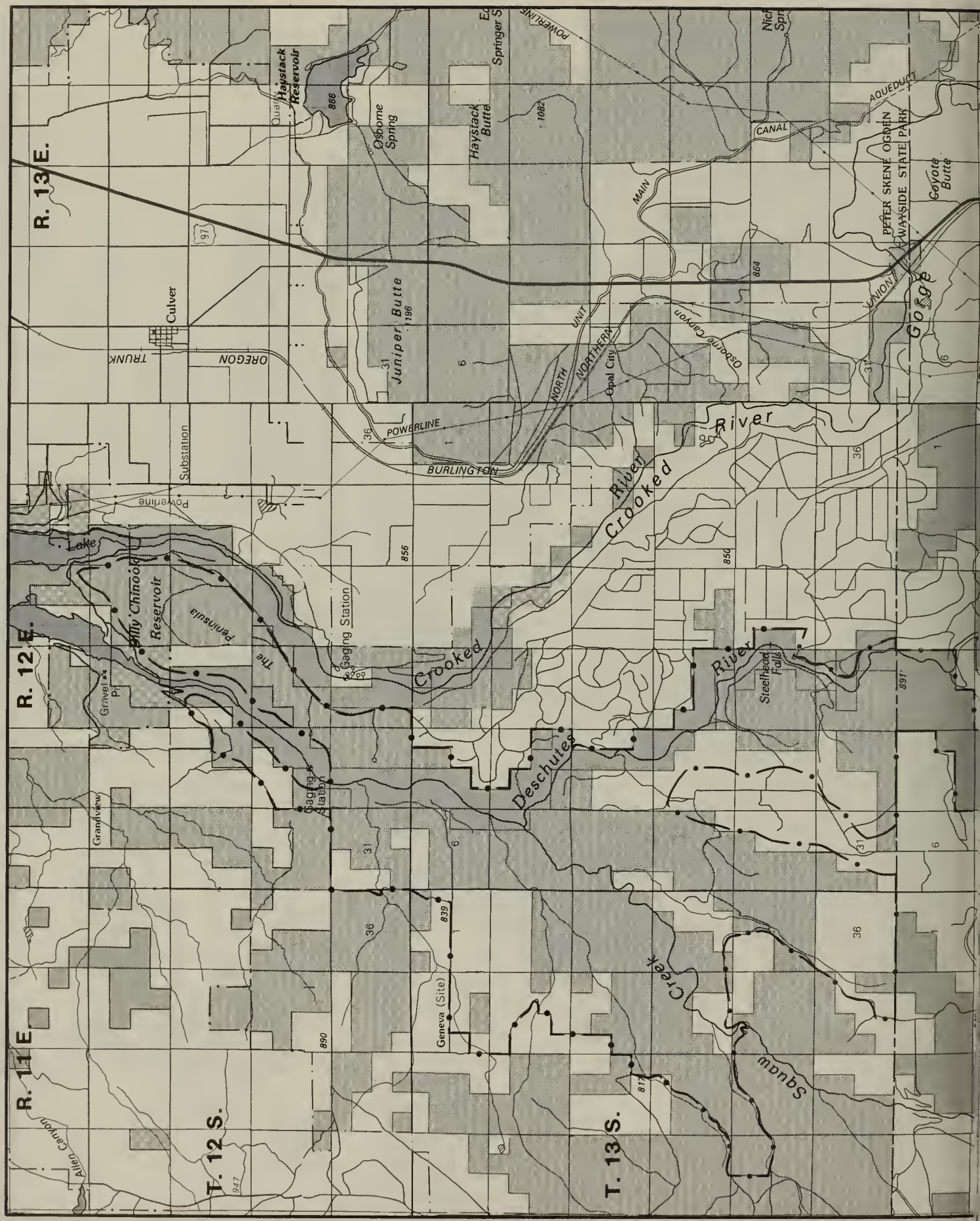
MIDDLE DESCHUTES STATE SCENIC WATERWAY

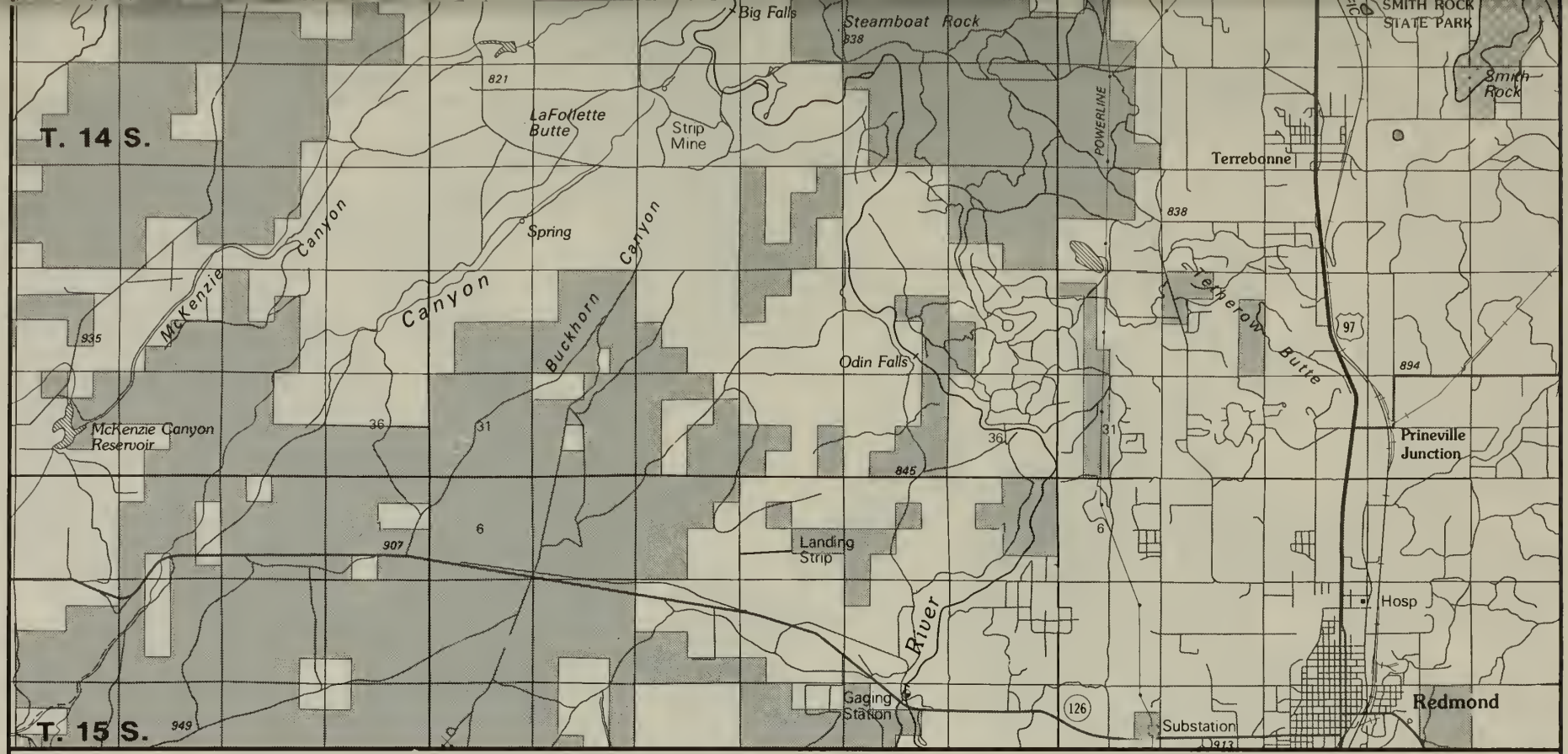
Oregon

1992

1 0 1 2 3 Miles

Scale 1:156,250


R. 13 E.
R. 12 E.
R. 11 E.
T. 12 S.
T. 13 S.
Haystack Reservoir
Osborne Spring
Haystack Butte
Springer S
POWERLINE
Nich Spri
AQUEDUCT
CANAL
MAIN
PETER SKENE OGDEN WAYSIDE STATE PARK
Coyote Butte
Culver
TRUNK
OREGON
Juniper Butte
UNIT
NORTHERN
Opal City
Osborne Canyon
UNION
Gorge
Substation
POWERLINE
BURLINGTON
Crooked River
Powerline
Lake
Billy Chinook Reservoir
Peninsula
The
Gaging Station
Gravel Pit
Crooked River
Steelhead Falls
Deschutes
Gaging Station
Grandview
Geneva (Site)
Squaw Creek
Allen Canyon



LEGEND

- Public Lands (Admin. by BLM)
- National Grassland
- State Lands
- Private Lands
- —•— Wilderness Study Area Boundary

U.S. DEPARTMENT OF THE INTERIOR
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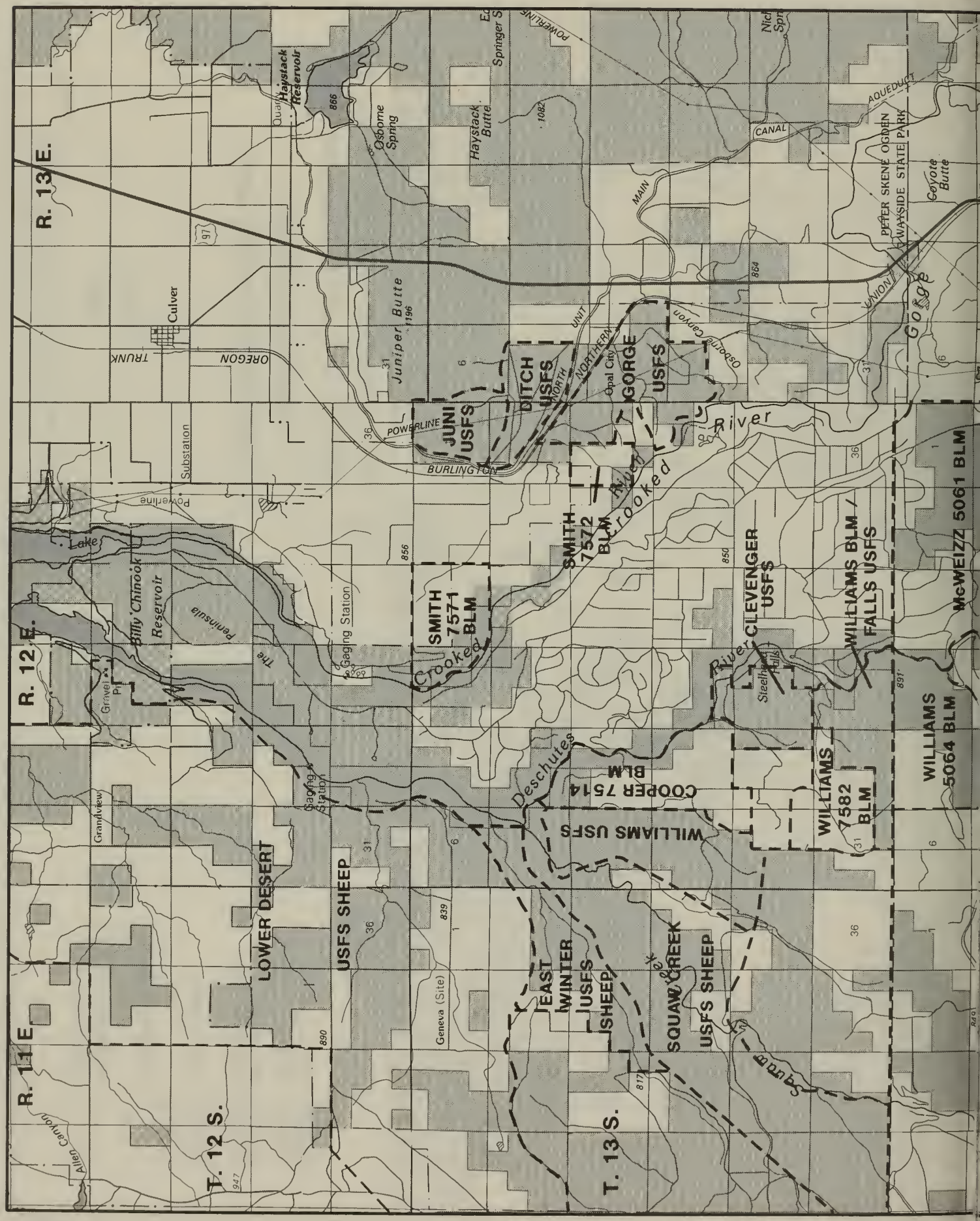
STEELHEAD FALLS
WILDERNESS STUDY AREA

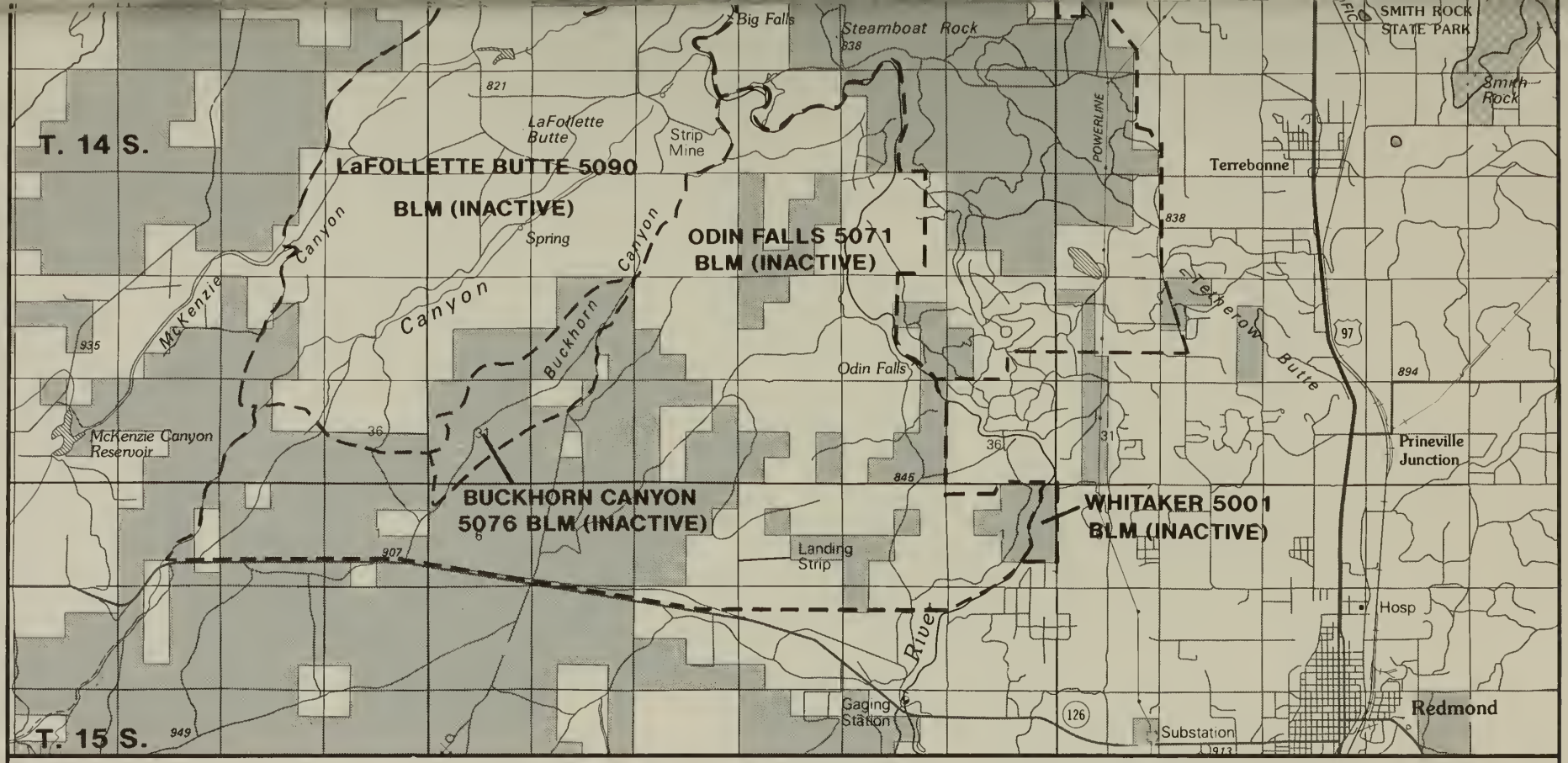
Oregon

1992

1 0 1 2 3 Miles

Scale 1:100,000


R. 13 E.
R. 12 E.
R. 11 E.
T. 12 S.
T. 13 S.
Culver
TRUNK
OREGON
Haystack Reservoir
Osborne Spring
Haystack Butte
Juniper Butte
Springer S
POWERLINE
CANAL
MAIN
AQUEDUCT
UNION
PETER SKENE OGDEN WAYSIDE STATE PARK
Coyote Butte
Gorge
Opal City
Osborne Canyon
NORTHERN UNIT
JUNI USFS
DITCH USFS
GORGE USFS
BURLINGTON
Substation
Powerline
Crooked River
SMITH 7572 BLM
SMITH 7571 BLM
CLEVENGER USFS
WILLIAMS BLM / FALLS USFS
McWEIZZ 5061 BLM
Billy Chinook Reservoir
Lake
Peninsula
The
Gravel Pit
Gaging Station
Steelhead Falls
Deschutes River
COOPER 7514 BLM
WILLIAMS USFS
WILLIAMS 7582 BLM
WILLIAMS 5064 BLM
Grandview
LOWER DESERT
USFS SHEEP
Geneva (Site)
EAST WINTER USFS SHEEP
SQUAW CREEK
USFS SHEEP
Allen Canyon



LEGEND

- Public Lands (Admin. by BLM)
- National Grassland
- State Lands
- Private Lands
- Grazing Allotment Boundary

U.S. DEPARTMENT OF THE INTERIOR
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MIDDLE DESCHUTES / LOWER CROOKED WILD AND SCENIC RIVERS

GRAZING ALLOTMENTS

Oregon

1992

1 0 1 2 3 Miles

Scale 1:100,000

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1992 c.2

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and Scenic

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Middle Deschutes/Lower
Crooked Wild and Scenic
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